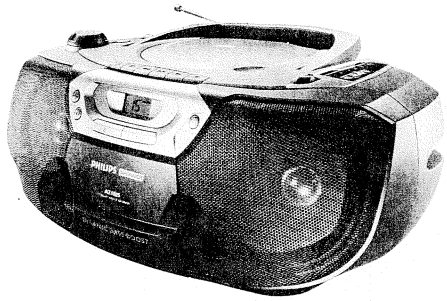
CD Stereo Radio Recorder

AZ1005

all versions

Service
Service
Service



Service Manual

COMPACT disc DIGITAL AUDIO

TABLE OF CONTENTS

	chapter
Handling chip components and safety	1 - 1
Technical Specification & Service Tools	2 - 1
Service Measurement	2 - 2
Connections & Controls	3 - 1
Instructions for use	3 - 2 to 3 - 5
Disassembly Diagram	4 - 1
CD Service Test Program	4 - 2 to 4 - 3
Block Diagram	5 - 1
Wiring Diagram	6 - 1
FRONT BOARD	
circuit diagram	7 - 1
layout diagram	7 - 2
TUNER BOARD (FM/MW)	
circuit diagram	8 - 1
layout diagram	8 - 2
TUNER BOARD (FM/MW/LW)	
circuit diagram	8 - 3
layout diagram	8 - 4
MAIN BOARD	
circuit diagram	9 - 1
layout diagram	9 - 2
RECORDER BOARD	
circuit diagram	10 - 1
layout diagram	10 - 2
CD MODULE	
layout diagram	11 - 1
circuit diagram	11 - 2
EXPLODED VIEWS DIAGRAM	
cabinet	12 - 1
tape deck	12 - 2
Mechanical partslist	12 - 2
Electrical partslist	13 - 1 to 13 - 3

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

CLASS 1
LASER PRODUCT

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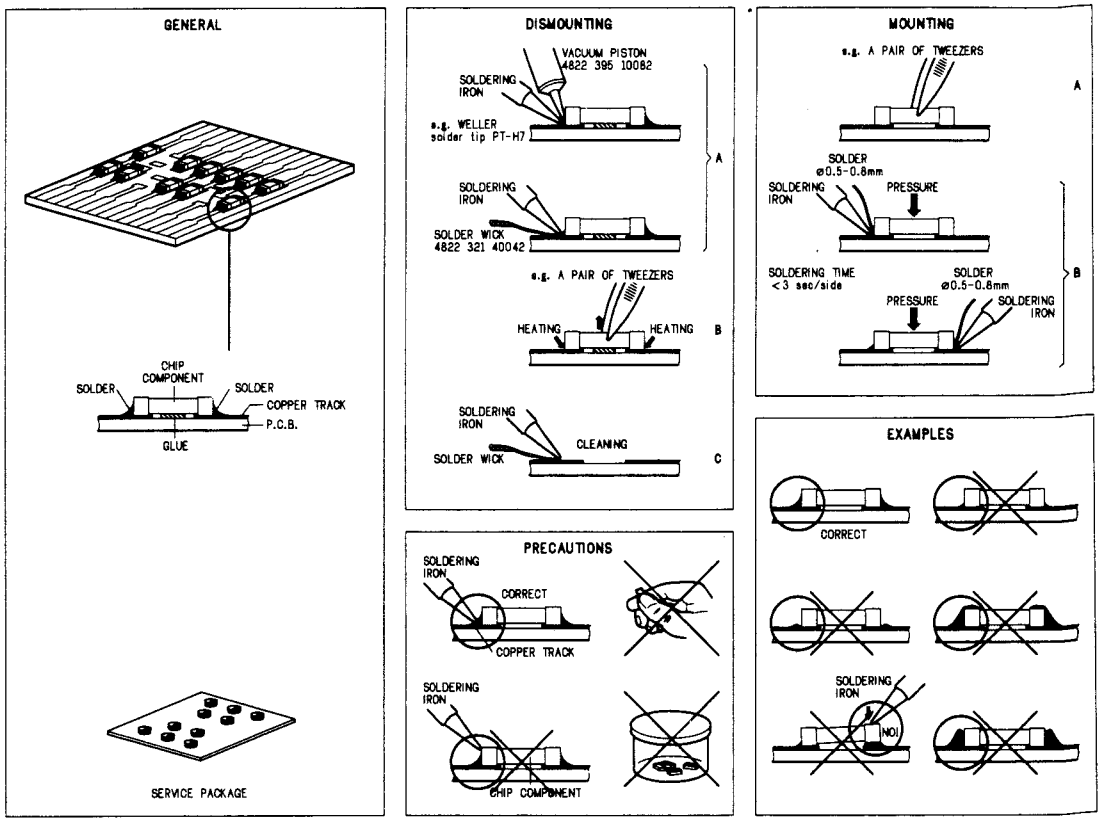
PCS 99 349

PHILIPS

HANDLING CHIP COMPONENTS



(GB) WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools at this potential.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu'aucune précaution nést prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfileer le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

ESD

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, dab sie im Reparaturfall über ein Puls-armband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen vermindern. Zorg ervoor dat u tijdens reparatie via een polsband met wererstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statische (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delápparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

Anti-static table matlarge1200x650x1.25mm	4822 466 10953
small 600x650x1.25mm	4822 466 10958
Anti-static wrist band	4822 395 10223
Connection box (1MOhm)	4822 320 11307
Extendible cable (to connect wrist band to conn. box)	4822 320 11305
Connecting cable (to connect table mat to conn. box)	4822 320 11306
Earth cable (to connect any product to mat or box)	4822 320 11308
Complete kit ESD3 (combining all above products)	4822 310 10671
Wristband tester	4822 344 13999

(GB)
Safety regulations require that the set be restored to its originial condition and that parts which are identical with those specified be used.
Safety components are marked by those symbol. ⚠

(GB) WARNING

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

(F) ATTENTION

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

(D) WARNUNG

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Original-ersatzteile zu verwenden.

(NL) WAARSCHUWING

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(I) AVVERTIMENTO

Le norme di sicurezza estigono che l'apparecchio venga rimesso nelle condizioni orginali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.

(S) Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(DK) Advarsel !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

(SF) Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

(GB)
After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.
The leakage current must not exceed 0.5mA.

(F)
"Pour votre sécurite, ces documents doivent être utilisés par des spécialistes agrées, seuls habilités à réparer votre appareil en panne".

TECHNICAL SPECIFICATIONS

GENERAL

Mains voltage	-/00	:	230 V
	-/11	:	120/230 V
	-/05/14	:	240 V
	-/17	:	120 V
Mains frequency	-/00/05/14	:	50 Hz
	-/11	:	50 / 60 Hz
	-/17	:	60 Hz
Battery	mains	:	9 V (R20 x 6)
Power consumption		:	10 W
Dimension (W x H x D)		:	395 x 155 x 240 mm
Weight		:	3.1 Kg

AMPLIFIER

Output power	mains	:	2 x 2 W
	battery	:	2 x 2 W
Speaker impedance		:	2 x 8 ohm
Frequency response		:	100 Hz - 8 kHz (±3dB)

TUNER - FM SECTION

Tuning range	:	87 - 108.5 MHz
IF frequency	:	10.7 MHz
Sensitivity	:	< 22 dB at 26dB S/N
Selectivity	:	> 20 dB at ±300kHz
IF rejection	:	> 54 dB
Image rejection	:	> 20 dB

TUNER - AM SECTION

Tuning range	MW	:	512 - 1635 kHz
	-/17	:	520 - 1730 kHz
	LW	:	153 - 279 kHz
IF frequency		:	468 kHz ± 3 kHz
Sensitivity	MW	:	< 4000 µV/m at 26dB S/N
	LW	:	< 6000 µV/m at 26dB S/N
Selectivity	MW	:	< 16 dB
	LW	:	< 20 dB
IF rejection ratio	MW	:	< 24 dB
	LW	:	< 26 dB
Image rejection ratio	MW	:	< 28 dB
	LW	:	< 30dB

AUDIO CASSETTE RECORDER

Number of tracks		:	1 stereo
Tape speed		:	4.76 cm/sec ± 3%
Wow & flutter		:	< 0.36 % JIS UWTD
Fast wind/rewind C60		:	< 120 sec.
Frequency response	P/B	:	125 - 6300 Hz
S/N ratio		:	> 36 dB

COMPACT DISC

Frequency response		:	63 Hz - 16 kHz
S/N ratio		:	> 62 dB
Channel difference	1 kHz	:	< 3 dB
Channel crosstalk	1 kHz	:	> 15 dB
Laser wavelength		:	780 ± 20nm
Laser light power		:	< 0.3 mW

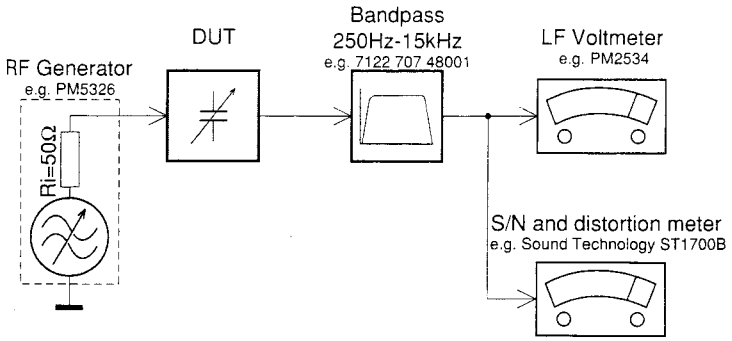
SERVICE TOOLS

Audio signal disc SBC 429.....4822 397 30184
Playability test disc SBC 444.....4822 397 30245
Test disc 5 (disc without errors) +
Test disc 5A (disc with dropout errors, black spots and fingerprints)
SBC 426/426A.....4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30 dB level without "pause").....4822 397 30155

Universal test cassette Fe SBC 420.....4822 397 30071

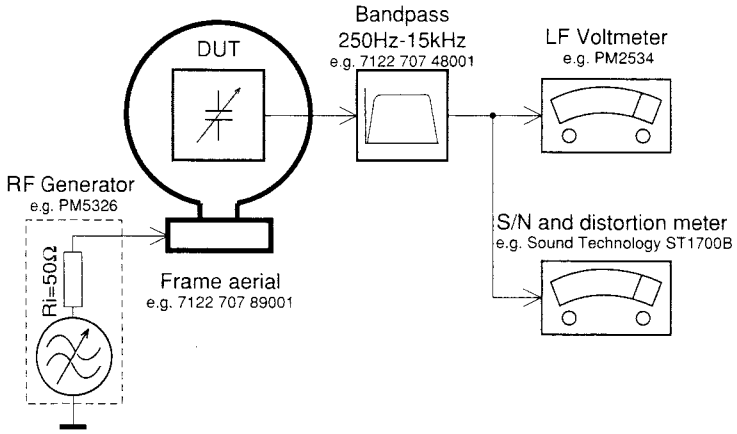
SERVICE MEASUREMENTS

Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

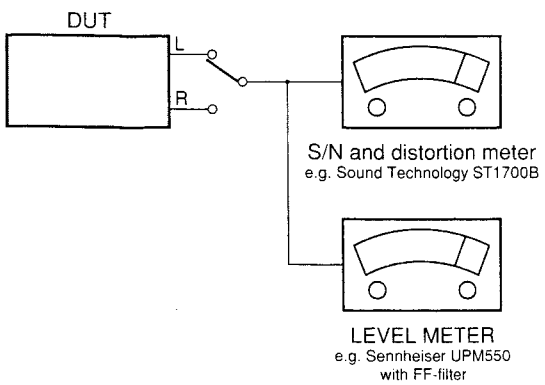
Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

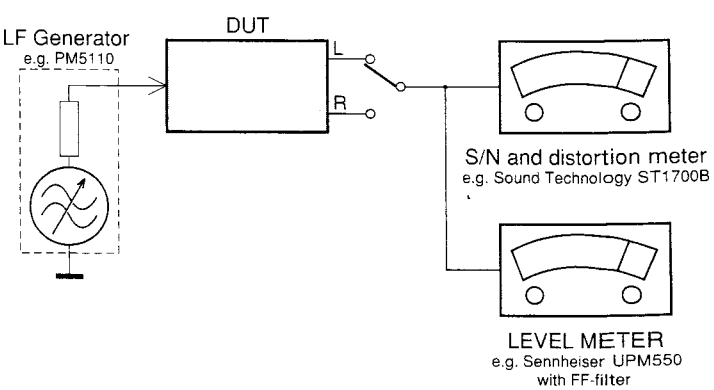
CD

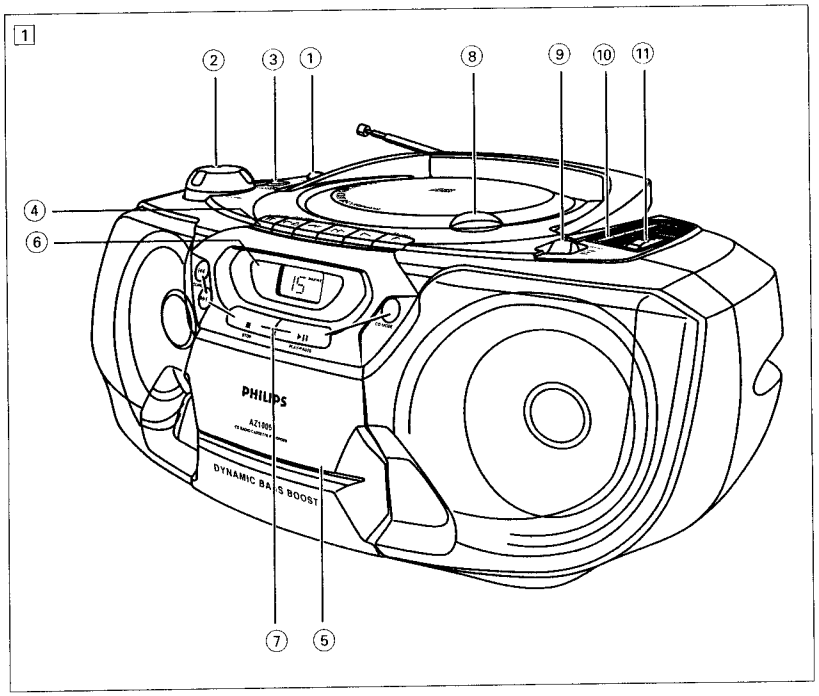
Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)

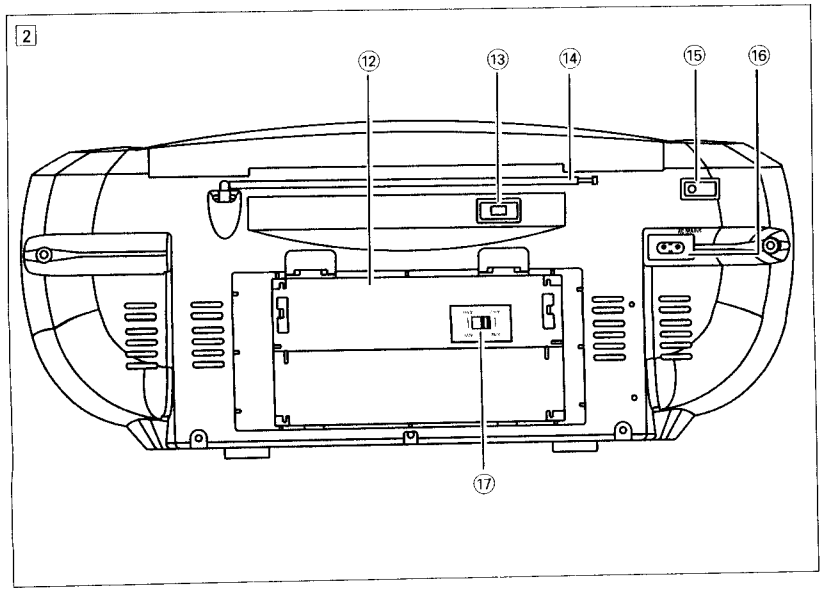


RECORDER

Use Universal Test Cassette **Fe** SBC420 4822 397 30071







TOP AND FRONT PANEL

① **Source selector** - to select source of sound: CD-RADIO-TAPE and also the POWER OFF switch.
② **VOLUME** - to adjust volume level.
③ **DBB** - Dynamic Bass Boost: for a more vivid bass response.

CASSETTE RECORDER:

④ **PAUSE II** - to interrupt recording or playback.
STOP•OPEN ■ ▲ - To stop the tape and to open the cassette holder.
SEARCH ◀◀ or ▶▶ - to fast wind/rewind the tape.
PLAY ◀ - to start playback.
RECORD ● - to start recording.
⑤ **Cassette compartment**

CD PLAYER:

⑥ **CD Display** - to show the CD functions.
⑦ **PLAY•PAUSE ▶II** - To start or interrupt CD play.
STOP ■ - to stop playback or erase a programme.
CD MODE - to select a different play mode. e.g. SHUFFLE/REPEAT; to programme and review programmed track numbers
SEARCH ⏮ or ⏭ - to skip or search a passage/ track backwards or forward
⑧ **LIFT TO OPEN** - to open/ close the CD door

RADIO:

⑨ **BAND** - to select FM/MW wave band
⑩ **Tuning dial pointer**
⑪ **TUNING** - to tune to radio stations

BACK PANEL

⑫ **Battery door** - to open the battery compartment
⑬ **BEAT CUT switch** - To eliminate any whistle tones during MW recordings.
⑭ **Telescopic aerial** - to improve FM reception
⑮ 🎧 - 3.5 mm stereo headphone socket
Note: Connecting headphones will switch off the loudspeakers
⑯ **AC MAINS** - socket for mains lead
⑰ **Voltage selector** - inside battery compartment

Batteries

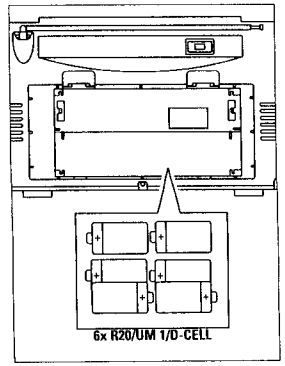
Whenever convenient, use the mains supply if you want to conserve battery life. The battery supply will be switched off when the set is connected to the mains. Make sure you remove the plug from the set and wall outlet before inserting batteries.

Batteries (optional)

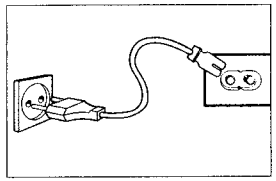
1. Open the battery compartment and insert six batteries, type R20, UM1 or D-cells (preferably alkaline) with the correct polarity as indicated by the (+) and (-) symbols inside the compartment.
2. Replace the compartment door, making sure the batteries are firmly and correctly in place. The set is now ready to operate.

– Incorrect use of batteries can cause electrolyte leakage and will corrode the compartment or cause the batteries to burst. Therefore:
  – Do not mix battery types, e.g. alkaline with carbon zinc. Only use batteries of the same type for the set.
  – When inserting new batteries, do not try to mix old batteries with the new ones.
  – Remove the batteries if the set is not to be used for a long time.

Batteries contain chemical substances, so they should be disposed of properly



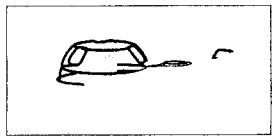
AC MAINS



1. Check if the mains voltage as shown on the type plate on the base of the set, corresponds to your local mains voltage. If it does not, consult your dealer or service organisation.
2. If your set is equipped with a voltage selector, adjust it so that it matches with the local mains.
3. Connect the mains lead to the MAINS socket and the wall socket.
   → The mains supply is now connected and ready for use.
4. To switch off completely, withdraw the mains lead from the wall socket.

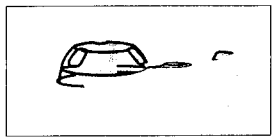
- Disconnect the mains lead from the wall socket to protect your set during heavy thunderstorms.

GENERAL OPERATION



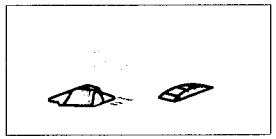
1. To switch on the set, adjust the source selector.
2. Adjust the sound using the **VOLUME** and **DBB** controls.
3. To switch off the radio, adjust the source selector to the **TAPE/POWER OFF** position, with the cassette keys released.

RADIO RECEPTION



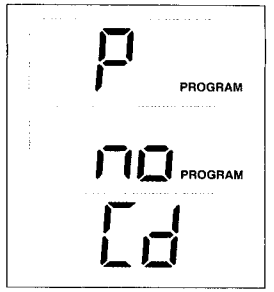
1. Set the source selector to **RADIO**.
2. Adjust the sound using the **VOLUME** and **DBB** controls.
3. Select the wave band **FM/MW** using **BAND**.
4. Tune to a radio station using **TUNING**.
5. To switch off, set the source selector to the **TAPE/POWER OFF** position (with the cassette keys released).

To improve radio reception



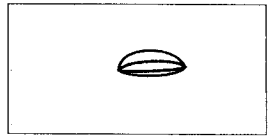
- For ***FM***, pull out the telescopic aerial.
  Incline and turn the aerial. Reduce its length if the signal is too strong (very close to a transmitter).
- For ***MW (AM)***, the set is provided with a built-in aerial so the telescopic aerial is not needed. Direct the aerial by turning the whole set.

CD DISPLAY INDICATION

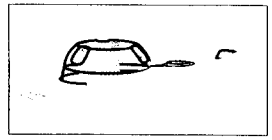


- **Cd:** CD door open/scanning for CD.
- *Total track number:* in stop mode.
- *Current track number:* during CD play.
- *Current track number flashes:* in Pause mode.
- **SHUFFLE/REPEAT** *modes:* when the respective mode is activated.
- **PROGRAM:** When active. **P** also appears briefly when you store a track.
- **no:** no disc/ error in CD operation or with the CD (see Troubleshooting)
- **E:** error in CD operation.
- **F:** programme memory full

PLAYING A CD

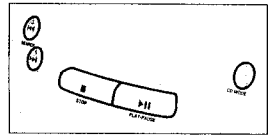


1. Set the source selector to **CD**
2. To open the CD door, lift the CD door edge marked **LIFT TO OPEN**.
3. Insert a CD with the printed side facing up and press the CD door gently to close.
   → The CD player scans the contents of the CD and the total number of tracks is displayed.
4. Press **PLAY•PAUSE ▶II** to start playback.
5. Adjust the sound using the **VOLUME** and **DBB** controls.
6. To interrupt playback press **PLAY•PAUSE ▶II**. To resume, press **PLAY•PAUSE ▶II** again.
   → The current track number flashes in the display
7. To stop CD play, press **STOP ■**.
8. To switch off the set, adjust the source selector to **TAPE/POWER OFF** position (with the cassette keys released)



Note: *CD playback will also stop when:*

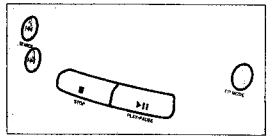
- the CD door is opened;
- the source selector is in the **TAPE/RADIO** positions;
- the CD has reached the end.



SELECTING A DIFFERENT TRACK

During playback, you can use the **SEARCH** keys to select a particular track.

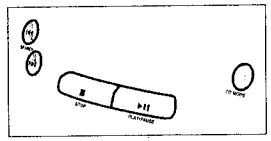
1. Press **SEARCH ▶▶I** once for the next track, or press repeatedly until the desired track number appears in the display.
   Press **SEARCH I◀◀** once to return to the beginning of a current track. Press **SEARCH I◀◀** more than once for a previous track.
2. If you have selected a track number in the stop or pause position, you will need to press **PLAY•PAUSE ▶II** to start playback.



Finding a passage within a track

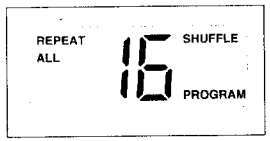
1. Press and hold down **SEARCH I◀◀** or **▶▶I**.
   → The CD is played at high speed and low volume.
2. When you recognize the passage you want, release the **SEARCH** key.

Different play modes: SHUFFLE/REPEAT



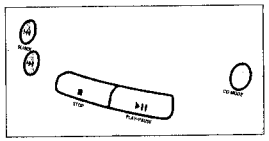
The **CD MODE** button allows you to select 4 different play modes which can also be combined with a CD program. The modes can be selected or changed during playback and will flash for two seconds before playing your selected mode.

1. During playback, select your play mode by pressing **CD MODE** once or more until the desired play mode appears in the display.
SHUFFLE - All tracks or programme are played in random order.
REPEAT ALL SHUFFLE - Repeats the entire CD or programme in random order.
REPEAT - Plays the current track continuously.
REPEAT ALL - repeats the entire CD or programme
→ You can use **SEARCH** ⏮ or ⏭ to skip tracks during CD MODE playback.



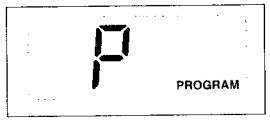
2. To return to normal playback press **CD MODE** until the various **SHUFFLE/ REPEAT** modes are no longer shown in the display.
→ You can also press **STOP** ■ to quit the play mode.

PROGRAMMING TRACK NUMBERS



You may store up to 20 tracks in the desired sequence. If you like, store any track more than once.

1. In the STOP position, press **SEARCH** ⏮ or ⏭ for your desired track.
2. As soon as your chosen track number is displayed, press **CD MODE** once to store the track.
→ The display will show '**P**' briefly and '**PROGRAM**', followed by your selected track number.



3. Select and store all desired tracks in this way.

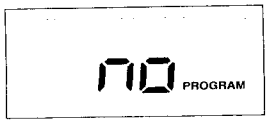
To review your set programme

- In the stop position, press and hold down **CD MODE** for more than two seconds.
→ The display will show in sequence all your stored track numbers.

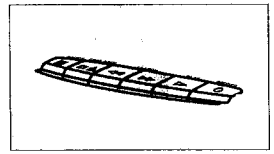
- Start playback of your programme by pressing **PLAY•PAUSE ⏯**.

Erasing a programme

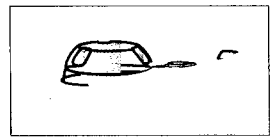
You can erase the contents of the memory by:
– lifting the CD door open;
– moving the source selector position;
– pressing **STOP** ■ twice during playback / in stop position.
→ The display will show '**no**' briefly and **PROGRAM**, which disappear when the programme is cancelled.



PLAYING A CASSETTE



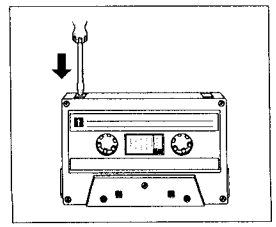
1. Set the source selector to **TAPE**.
2. Press **STOP•OPEN** ■ ▲ to open the cassette holder and insert a recorded cassette.
3. Close the cassette holder.
4. Press **PLAY** ◀ to start playback.
5. Adjust the sound using the **VOLUME** and **DBB** controls.
6. To interrupt playback press **PAUSE ⏸**. To resume, press the key again.



7. By pressing ◀◀ or ▶▶, fast winding of the tape is possible in both directions.To stop fast winding, press **STOP•OPEN** ■ ▲
8. To stop the tape, press **STOP•OPEN** ■ ▲
→ The keys are automatically released at the end of the tape, except if **PAUSE ⏸** has been activated.
9. With the source selector in **TAPE/POWER OFF** position, the set is switched off when all the cassette keys are released.

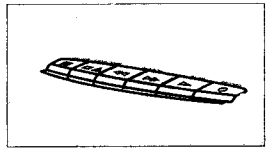
General information on cassette recording

- Recording is permissible insofar as copyright or other rights of third parties are not infringed.
- This deck is not suitable for recording on CHROME (IEC II) or METAL (IEC IV) type cassettes. For recording you should use NORMAL type cassettes (IEC I) on which the tabs have not been broken.
- The recording level is set automatically. Altering the VOLUME and DBB controls will not affect the recording in progress.
- At the very beginning and end of the tape, no recording will take place during the 7 seconds, when the leader tape passes the recorder heads.
- To protect a tape from accidental erasure have the tape in front of you and break out the left tab. Recording on this side is no longer possible. To record over this side again, cover the tabs with a piece of adhesive tape.



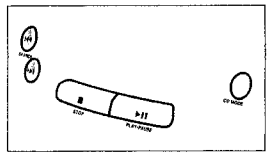
SYNCHRO START CD RECORDING

1. Set the source selector to **CD**.
2. Insert a CD and if desired, programme track numbers.
3. Press **STOP•OPEN ■ ▲** to open the cassette holder.
4. Insert a blank tape.
5. Close the cassette holder.
6. Press **RECORD ●** to start recording.
   → Playing of the CD programme starts automatically from the beginning of the programme. It is not necessary to start the CD player separately.
7. For brief interruptions, press **PAUSE II**. To resume recording, press **PAUSE II** again.
8. To stop recording press **STOP•OPEN ■ ▲**



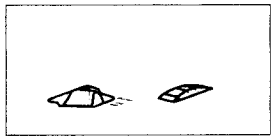
To select and record a particular passage within a track

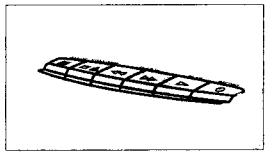
1. During playback, press and hold down the **SEARCH** button ⏮ or ⏭ to find your passage.
2. Press **PLAY•PAUSE ▶II** to put the CD player on pause at the selected passage.
   → Recording will begin from this exact point in the track when you press **RECORD ●**.



RECORDING FROM THE RADIO

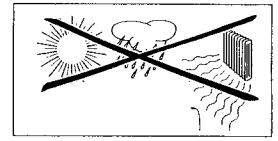
1. Set the source selector to **RADIO**.
2. Tune to the desired radio station (See **RADIO RECEPTION**).
3. Press **STOP•OPEN ■ ▲** to open the cassette holder and insert a blank tape.
4. Close the cassette holder.
5. Press **RECORD ●** to start recording.
   Note: *If you are recording an MW (AM) station, adjust the BEAT CUT switch to eliminate any whistle noises.*
6. For brief interruptions, press **PAUSE II**. To resume recording, press **PAUSE II** again.
7. To stop recording, press **STOP•OPEN ■ ▲**





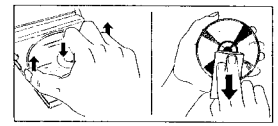
PRECAUTIONS & GENERAL MAINTENANCE

- Place the set on a hard, flat surface so that the system does not tilt.
- Do not expose the set, CDs, batteries or cassettes to humidity, rain, sand or excessive heat caused by heating equipment or direct sunlight.
- Always shut the CD door to keep the CD compartment dust-free. To clean, dust the compartment with a soft dry cloth.
- Do not cover the set. Adequate ventilation with a minimum gap of 15 cms between the ventilation holes and surrounding surfaces is necessary to prevent heat build-up.
- The mechanical parts of the set contain self-lubricating bearings and must not be oiled or lubricated.
- To clean the set, use a soft, slightly dampened chamois leather. Do not use any cleaning agents containing alcohol, ammonia, benzene or abrasives as these may harm the housing.



CD PLAYER AND CD HANDLING

- The lens of the CD player should *never be touched.*
- Sudden changes in the surrounding temperature can cause condensation to form and the lens of your CD player to cloud over. Playing a CD is then not possible. Do not attempt to clean the lens but leave the set in a warm environment until the moisture evaporates.
- Use only Digital Audio CDs.
- To take a CD out of its box, press the centre spindle while lifting the CD. Always pick up the CD by the edge and replace the CD back in its box after use to avoid scratching and dust.
- To clean the CD, wipe in a straight line from the centre towards the edge using a soft, lint-free cloth. Do not use cleaning agents as they may damage the disc.
- *Never write* on a CD or attach stickers to it.

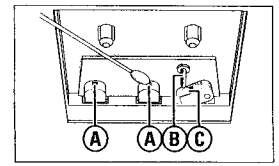


TAPE DECK MAINTENANCE

To ensure a good recording and playback of the tape deck, clean parts Ⓐ,Ⓑ and Ⓒ show in the diagram below, after approx. 50 hours of operation, or on average once a month. Use a cotton bud slightly moistened with alcohol or a special head cleaning fluid to clean the deck.

- Open the cassette holder by pressing **STOP•OPEN ■ ▲**.
- Press **PLAY ◀** and clean the rubber pressure rollers Ⓒ.
- Press **PAUSE II** and clean the magnetic heads Ⓐ and also the capstans Ⓑ.
- After cleaning, press **STOP•OPEN ■ ▲**.

Cleaning of the heads can also be done by playing a cleaning cassette through once.



If a fault occurs, first check the points listed below before taking the set for repair. If you are unable to remedy a problem by following these hints, consult your dealer or service centre.

WARNING: ***Do not open the set as there is a risk of electric shock. Under no circumstances should you try to repair the set yourself, as this would invalidate the guarantee.***

PROBLEM
– *POSSIBLE CAUSE*
• REMEDY

No sound/power
– *VOLUME is not adjusted.*
• Adjust the VOLUME.
– *Headphones are connected.*
• Disconnect headphones.
– *Mains lead not securely connected.*
• Connect the AC mains lead properly.
– *Batteries exhausted.*
• Insert fresh batteries.
– *Batteries incorrectly inserted.*
• Insert the batteries correctly.

Display does not function properly
– *Electrostatic discharge.*
• Switch off set, disconnect the mains plug and reconnect after a few seconds.

CD playback does not work
– *CD is badly scratched or dirty.*
• Replace or clean the CD, see Maintenance.
– *Laser lens steamed up.*
• Wait until lens has acclimatized.

The CD skips tracks
– *CD is damaged or dirty.*
• Replace or clean the CD.
– *SHUFFLE or PROGRAM is active.*
• Quit SHUFFLE/PROGRAM mode(s).

Poor cassette sound quality
– *Dust and dirt on the heads, etc.*
• Clean deck parts etc., see maintenance.
– *Use of incompatible cassette types (METAL or CHROME).*
• Only use NORMAL (IEC I) for recording.

Recording does not work
– *Cassette tab(s) may be broken out.*
• Apply a piece of adhesive tape over the missing tab space.

Environmental information

All unnecessary packaging material has been omitted. We have done our utmost to make the packaging easily separable into three mono materials: cardboard, polystyrene and plastic.

Your set consists of materials which can be recycled if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

The type plate is located on the bottom of the set.

A99-576

Service
Service
Service

Product Service Group CE Audio

Service Information

Already published Service Information :

New Versions

Versions **AZ1005/11** has been introduced.

For servicing refer to Service Manual AZ1005 4822 725 26212, except for the following different items:

Mechanical Partslist :

427	996500001165	Dial Lens

Electrical Partslist :

996500001166	⚠ Transformer 120/230V
482227730971	⚠ Voltage Selector
482226731891	⚠ Mains Socket

From production week 9914 onwards CD-drive *CD94V5T1* **has been replaced by the new type** *DA11 4822 691 10747.*

To adapt the electronic circuity to the new CD-drive following components have been changed:

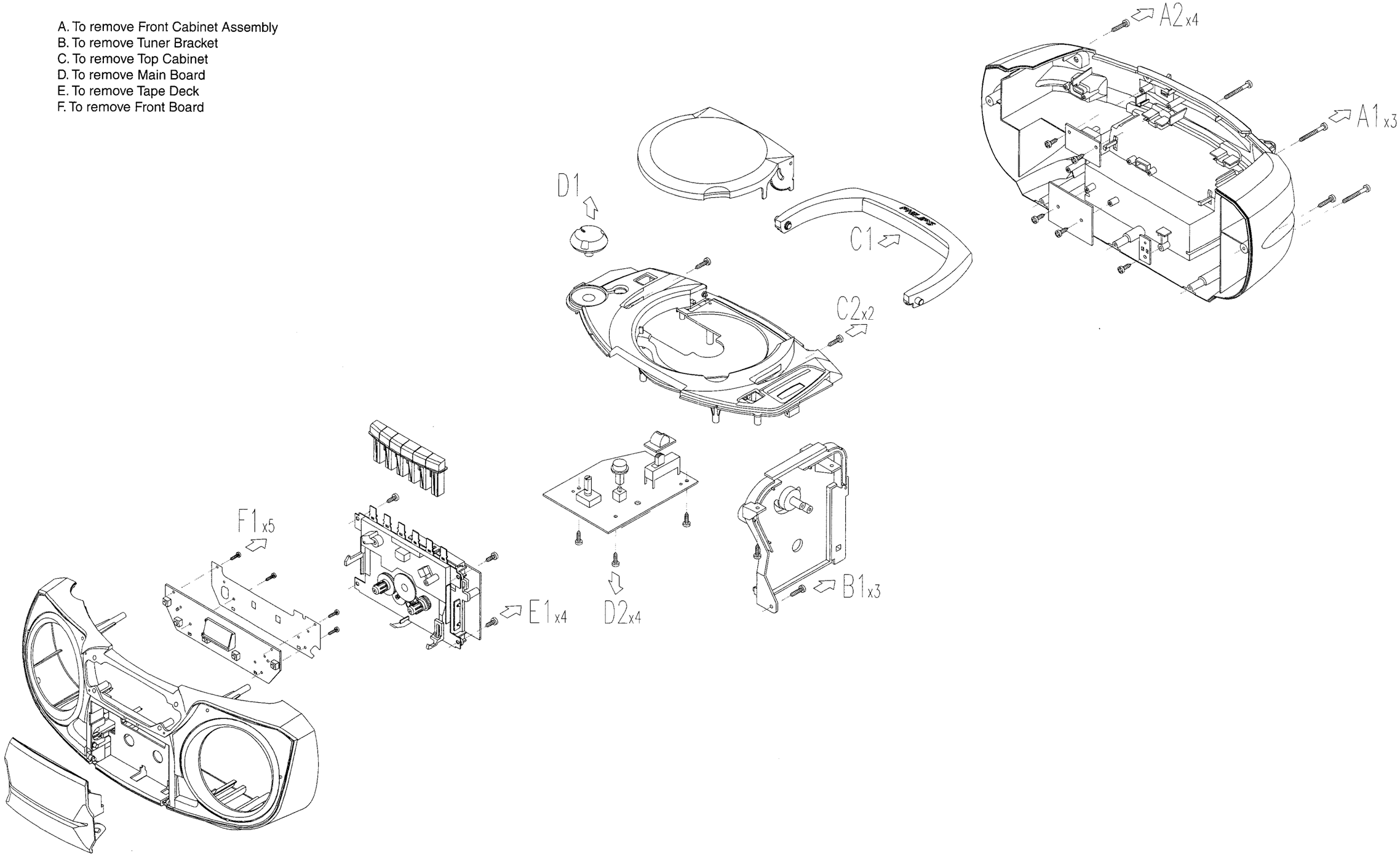
3828	changed from	18k	to 68k	4822 116 52297
3851	changed from	10k	to 15k	4822 116 52244
3853	changed from	15k	to 18k	4822 116 52251
3855	changed from	33k	to 27k	4822 116 52264

Remark:
Sets with the new CD-drive are marked with factory change code **KT01**.

DISASSEMBLY DIAGRAM

A. To remove Front Cabinet Assembly
B. To remove Tuner Bracket
C. To remove Top Cabinet
D. To remove Main Board
E. To remove Tape Deck
F. To remove Front Board

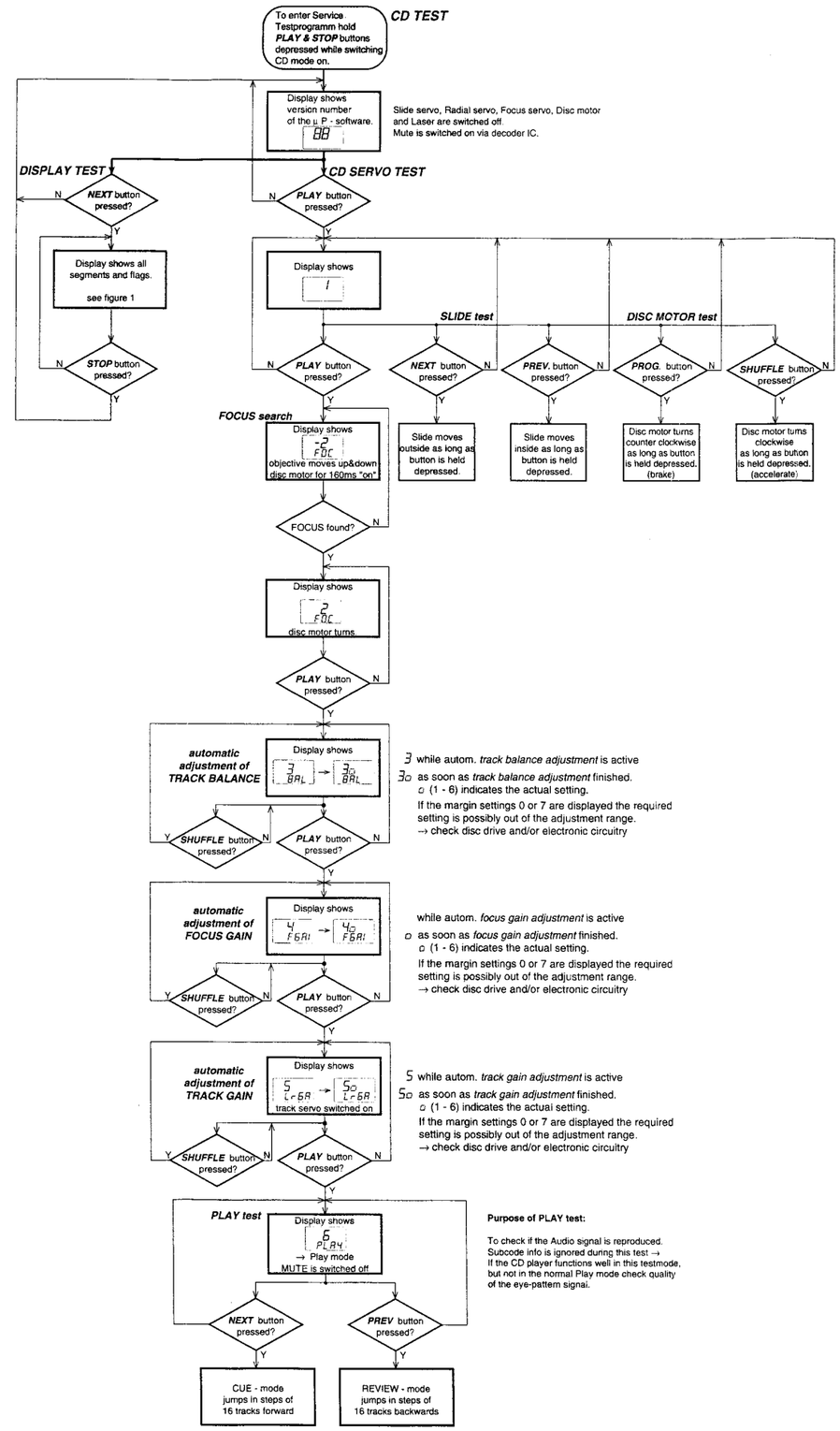
4-1



CD SERVICE TESTPROGRAM

- *STOP* button pressed in any step returns to begin of Service Testprogram.
- To leave Service Testprogram switch mode switch to off-position.
- Door switch is ignored → CD door can be opened.
- *Volume up/down* buttons function independentely of the service testprogram.

fig. 1


CD TEST
To enter Service Testprogramm hold PLAY & STOP buttons depressed while switching CD mode on.
Display shows version number of the µ P - software.
88
Slide servo, Radial servo, Focus servo, Disc motor and Laser are switched off.
Mute is switched on via decoder IC.
DISPLAY TEST
CD SERVO TEST
NEXT button pressed?
PLAY button pressed?
Display shows all segments and flags.
see figure 1
STOP button pressed?
Display shows
1
SLIDE test
DISC MOTOR test
PLAY button pressed?
NEXT button pressed?
PREV. button pressed?
PROG. button pressed?
SHUFFLE button pressed?
FOCUS search
Display shows
-2 FOC
objective moves up&down disc motor for 160ms "on"
Slide moves outside as long as button is held depressed.
Slide moves inside as long as button is held depressed.
Disc motor turns counter clockwise as long as button is held depressed. (brake)
Disc motor turns clockwise as long as button is held depressed. (accelerate)
FOCUS found?
Display shows
-2 FOC
disc motor turns
PLAY button pressed?
automatic adjustment of TRACK BALANCE
Display shows
3 BAL
3o BAL
SHUFFLE button pressed?
PLAY button pressed?
automatic adjustment of FOCUS GAIN
Display shows
4 FBAL
4o FBAL
automatic adjustment of TRACK GAIN
Display shows
5 TrBA
5o TrBA
track servo switched on
PLAY test
Display shows
5 PLAY
→ Play mode
MUTE is switched off
NEXT button pressed?
PREV button pressed?
CUE - mode jumps in steps of 16 tracks forward
REVIEW - mode jumps in steps of 16 tracks backwards

3 while autom. *track balance adjustment* is active

3o as soon as *track balance adjustment* finished.
o (1 - 6) indicates the actual setting.
If the margin settings 0 or 7 are displayed the required setting is possibly out of the adjustment range.
→ check disc drive and/or electronic circuitry

while autom. *focus gain adjustment* is active

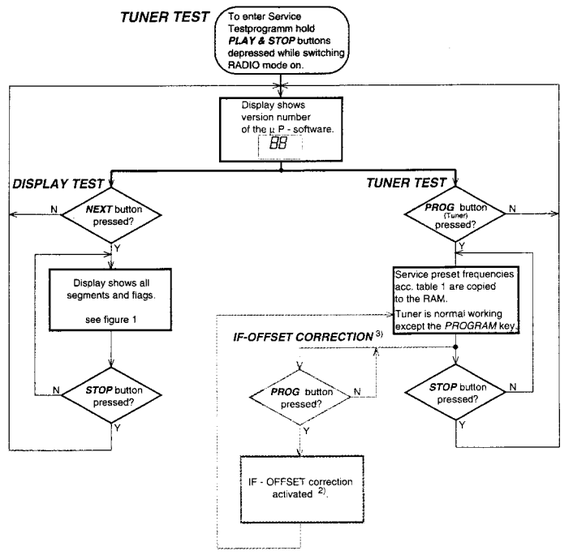
o as soon as *focus gain adjustment* finished.
o (1 - 6) indicates the actual setting.
If the margin settings 0 or 7 are displayed the required setting is possibly out of the adjustment range.
→ check disc drive and/or electronic circuitry

5 while autom. *track gain adjustment* is active

5o as soon as *track gain adjustment* finished.
o (1 - 6) indicates the actual setting.
If the margin settings 0 or 7 are displayed the required setting is possibly out of the adjustment range.
→ check disc drive and/or electronic circuitry

Purpose of PLAY test:

To check if the Audio signal is reproduced. Subcode info is ignored during this test → If the CD player functions well in this testmode, but not in the normal Play mode check quality of the eye-pattern signal.


TUNER TEST
To enter Service Testprogramm hold PLAY & STOP buttons depressed while switching RADIO mode on.
Display shows version number of the µ P - software.
88
DISPLAY TEST
TUNER TEST
NEXT button pressed?
PROG button (Tuner) pressed?
Display shows all segments and flags.
see figure 1
Service preset frequencies acc. table 1 are copied to the RAM.
Tuner is normal working except the PROGRAM key.
IF-OFFSET CORRECTION 3)
STOP button pressed?
PROG button pressed?
IF - OFFSET correction activated 2).

SERVICE PRESET FREQUENCIES

REGION / PRESET	EUROPE FM/MW/LW /00/05/20/25	EUROPE FM/MW/LW/SW /00/05/20/25	East EUROPE FM/MW/LW /14/34	USA FM/MW /17/37	OVERSEAS FM/MW 1)Grid switchable 10-100kHz/9-50kHz /01/21	OVERSEAS FM/MW/SW 1)Grid switchable 10-100kHz/9-50kHz /01/21	KOREA FM/MW-stereo /13/33	CHINA FM/MW/SW /15/35
1	87,5 MHz	87,5 MHz	65,81 MHz	87,5 MHz	87,5 MHz	87,5 MHz	87,5 MHz	87,5 MHz
2	108 MHz	108 MHz	108 MHz	108 MHz	108 MHz	108 MHz	108 MHz	108 MHz
3	531 kHz	531 kHz	74 MHz	530 kHz	530/531 kHz	530/531 kHz	531 kHz	531 kHz
4	1602 kHz	1602 kHz	87,5 MHz	1700 kHz	1700/1602 kHz	1700/1602 kHz	1602 kHz	1602 kHz
5	558 kHz	558 kHz	531 kHz	560 kHz	560/558 kHz	560/558 kHz	558 kHz	558 kHz
6	1494 kHz	1494 kHz	1602 kHz	1500 kHz	1500/1494 kHz	1500/1494 kHz	1494 kHz	1494 kHz
7	153 kHz	153 kHz	558 kHz			3,9 MHz		5,9 MHz
8	279 kHz	279 kHz	1494 kHz			12,1 MHz		17,9 MHz
9	198 kHz	198 kHz	153 kHz			4,2 MHz		6,2 MHz
10		5,9 MHz	279 kHz			11 MHz		17MHz
11		17,9 MHz	198 kHz					
12		6,2 MHz						
13		17MHz						

table 1

1) **How to set frequency grid:**

AM - 9 kHz / FM - 50 kHz : Hold ***BAND & TUNING DOWN*** buttons depressed while switching MODE-switch to RADIO.

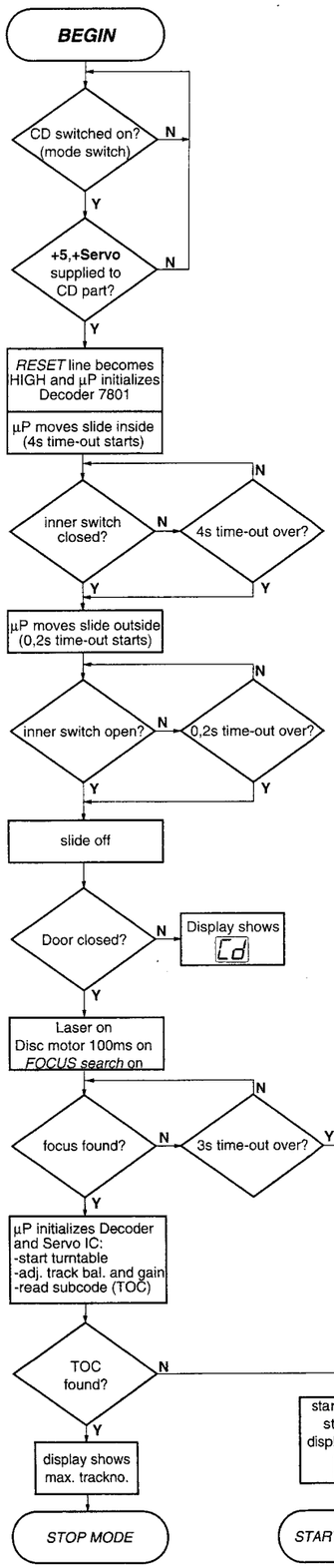
AM - 10 kHz / FM - 100 kHz : Hold ***BAND & TUNING UP*** buttons depressed while switching MODE-switch to RADIO.

Selected frequency grid is stored in the EEPROM.

2) In sets with 30kHz grid on FM band it may occur that the tuned frequency is indicated wrong on the display because of tolerances of the discriminator filter.
For that reason the testsoftware is prepared for an *automatic IF-offset correction.*
Note: This test functions only with the East European tuner version used in /14/34 set versions.
The test was executed on every set in the production line.
In case the discriminator filter or the EEPROM has to be exchanged the *automatic IF-offset correction* should also be executed after repair.
To execute the *automatic IF-offset correction proceed as follows:*
* feed a strong 87.5MHz signal to the antenna
* press the PROGRAM button
The µP starts now several times the *search* mode.
If the transmitter was found at 87.5MHz the stop-frequency sent by the radio IC is compared with the nominal frequency else the display shows "00E".
When the same difference is found twice the value will be stored as offset.
The actual used offset is shown on the display (-3, -2, -1, 0, 1, 2, 3).

servtest EVA-PLL 221098

CD STARTUP PROCEDURE



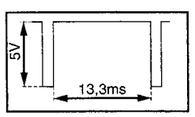
Remark: To check focus servo, slide servo, track servo and turntable use service test program

- Battery empty?
- check **+5** and **+Servo**

check: - door switch

check: - Laser light on ? - Check pin 38 of 7803 and *LASER CONTROL* circuit
- Focus Servo

check: - Motor control pin 37/38 of Decoder 7801 and Disc Motor driver 7805
- HF Signal
- Signal on pin7 of Decoder 7801



Startup CD97, 970310

Abbreviations and Pin-description of CD ICs

SERVO PROCESSOR M62475FP

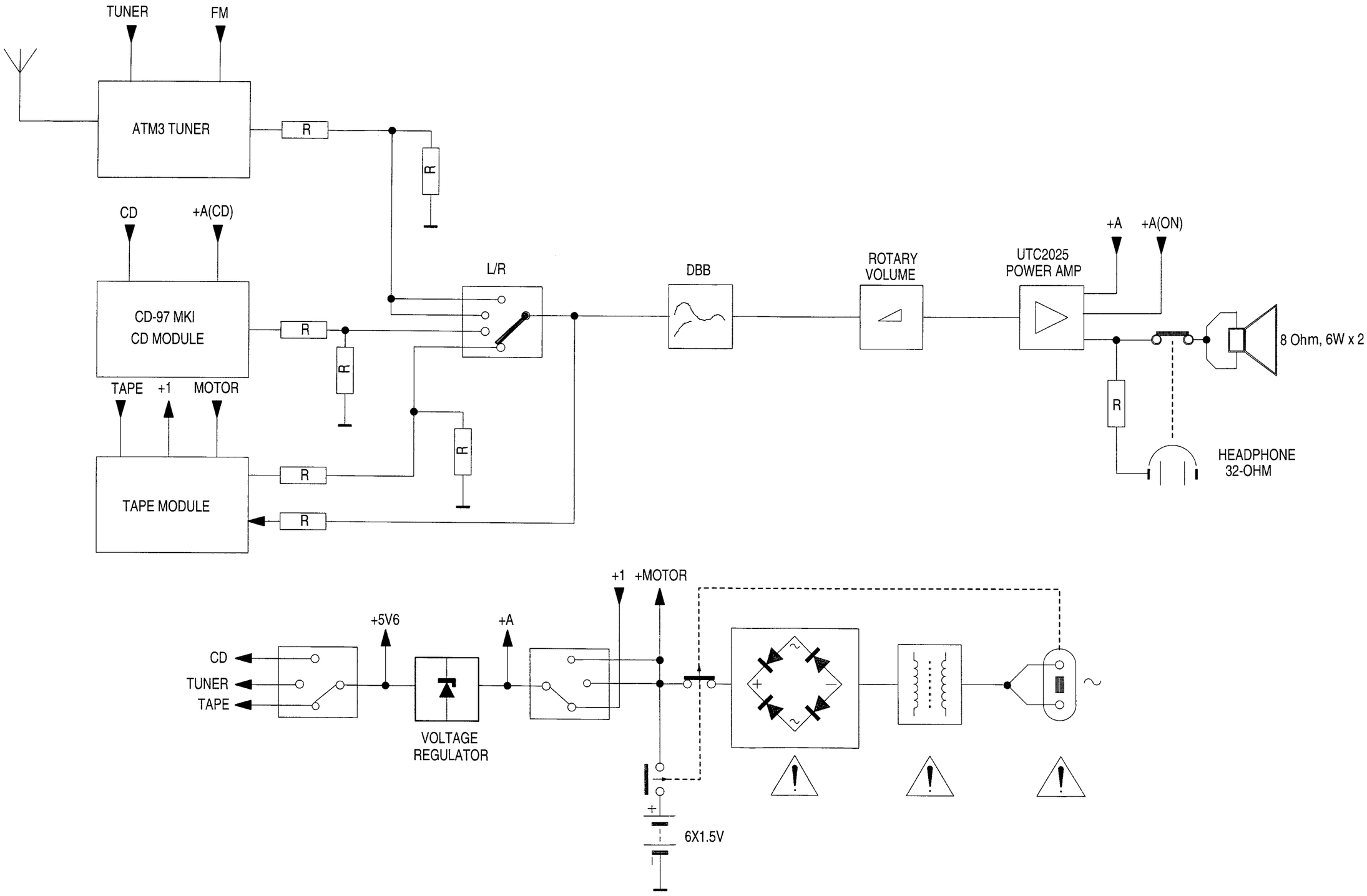
Pin	*Name*	*Direction*	*Description*
1-3	A, B, C	Diode array → Servo processor	Current input (central photo diode signal input
4-5	E, F	Diode array → Servo processor	Current input (satellite photo diode signal input
6	SGT	Servo processor → Track error ampl. Input	Signal generator output to track servo, sends 1700Hz for adjustment procedure
7	TE -	-	Inverting input of track error amplifier
8	TEGain	-	Gain control pin of track error amplifier
9	TG1	-	Track Gain 1 - switch: controls the gain of the track servo amplifier
10	TE out	-	Track Error amplifier output
11	TC/Shock	-	Track Cross/Shock detector input
12	TS +	-	Non inverting input of track servo amplifier
13	TG2	not connected	Track Gain 2 - switch: controls the gain of the track servo amplifier
14	TS -	-	Inverting input of side servo amplifier
15	TS out	Servo processor → Servo driver	Output of track servo amplifier
16	SS +	-	Non inverting input of track servo amplifier
17	SS -	-	Inverting input of side servo amplifier
18	Slide out	Servo processor → Motor driver	Output of slide servo amplifier
19	DET. FILTER	-	Pin for connection of DETection FILter capacitor of *ADJUST LOGIC*
20	BIAS	Servo processor → external electronic	Reference Voltage output Vcc/2 of internal BIAS-generator
21	GND	-	Ground connection pin (negative supply)
22	MLA/DIS	µp → Servo processor	Serial interface Microprocessor Latch control/DIScharge control for adjustment
23	JP1/SG	µp → Servo processor	Serial interface Jump control line/Signal Generator input line for adjustment
24	MCK	µp → Servo processor	Serial interface Clock input line
25	MSD	µp → Servo processor	Serial interface Data input line
26	D_{out}	Servo processor → µp	Serial interface Data output line
27	C_{LPF}	-	Pin for connection of Low Pass Filter capacitor of *ADJUST LOGIC*
28	I_{REF}	-	Reference current input
29	V_{CC}	-	Positive supply connection pin (4V - 5.5V)
30	FS_{OUT}	Servo processor → Servo driver	Output of focus servo amplifier
31	FS -	-	Inverting input of focus serco amplifier
32	FEGain	-	Gain control pin of focus error amplifier
33	FE -	-	Inverting input of focus error amplifier
34	SGF	Servo processor → Focus error ampl. Input	Signal generator output to focus servo, sends 1700Hz for adjustment procedure
35	C_{FSR}	-	Charge capacitor for Focus Search triangle-generator
36	ALPC +	-	Non inverting input of Automatic Laser Power amplifier
37	ALPC -	-	Inverting input of Automatic Laser Power Control amplifier
38	$ALPC_{OUT}$	Servo processor → Laser driver	Output of Automatic Laser Power Control amplifier
39	MRC	-	Connection pin for capacitor of Mirror detector
40	HF	Servo processor → Decoder	Output of HF amplifier
41	HFI	-	Inverting input of HF amplifier
42	ABC	-	Sum output of amplified A, B and C input (central photo diode signal input) to external ac-coupling capacitor

SIGNAL PROCESSOR M65821FP

Pin	*Name*	*Direction*	*Description*
1	VDD1	-	+supply for signal processor
2	EMP	not connected	Emphasis flag output
3	SYCLK	not connected	Frame synchronize output
4	LOCK	not connected	Low disc rotation detect output
5	SCAND	not connected	Subcode sync signal detection
6	CRCF	not connected	Subcode Q CRC check flag output
7	SBQS	Signal processor → µP	Interrupt signal to read out subcode Q data
8	MSD	µP ↔ Signal processor	Data line
9	RESET	Reset circuit → Signal processor	System reset
10	MCK	µP → Signal processor	Clock input
11	MLA	µP → Signal processor	Latch clock input
12-14	MODx	µP → Signal processor	Mode setting inputs (0,1,2)
15	VDD2	-	+supply for data slicer and VCO
16	IREF	-	Current reference
17	HFD	Signal processor → µP	HF signal detect
18	LPF	-	PLL loop filter
19	HF	Servo processor → Signal processor	HF signal input
20	TLC	-	Output from slice level control
21	VSS2	-	Ground
22	C846	not connected	8,4672MHz clock output
23	C423	Signal processor → µP	4,2336MHz clock output
24	EST2	not connected	Error monitor output 2
25	EST1	not connected	Error monitor output 1
26	XI	X-Tal → Signal processor	Crystal oscillator input
27	XO	Signal processor → X-Tal	Crystal oscillator output
28	DOTX	not connected	Output of digital interface
29	DO1	Signal processor → DAC	Serial data output to DAC
30	DO2	not connected	Serial data output to Dual DAC
31	CKSEL	not connected	Crystal selector input. H=8MHz, L=16MHz
32	DSCK	Signal processor → DAC	Data shift clock
33	WDCK	Signal processor → DAC	Word clock
34	LRCK1	Signal processor → DAC	Left/Right clock
35-36	not used		Left/Right clock
37	PWM1	Signal processor → Motor driver	Disc motor driving (Pulse Width Modulation) output 1
38	PWM2	Signal processor → Motor driver	Disc motor driving (Pulse Width Modulation) output 2
39-41	not used		
42	VSS1	GND	Digital system ground

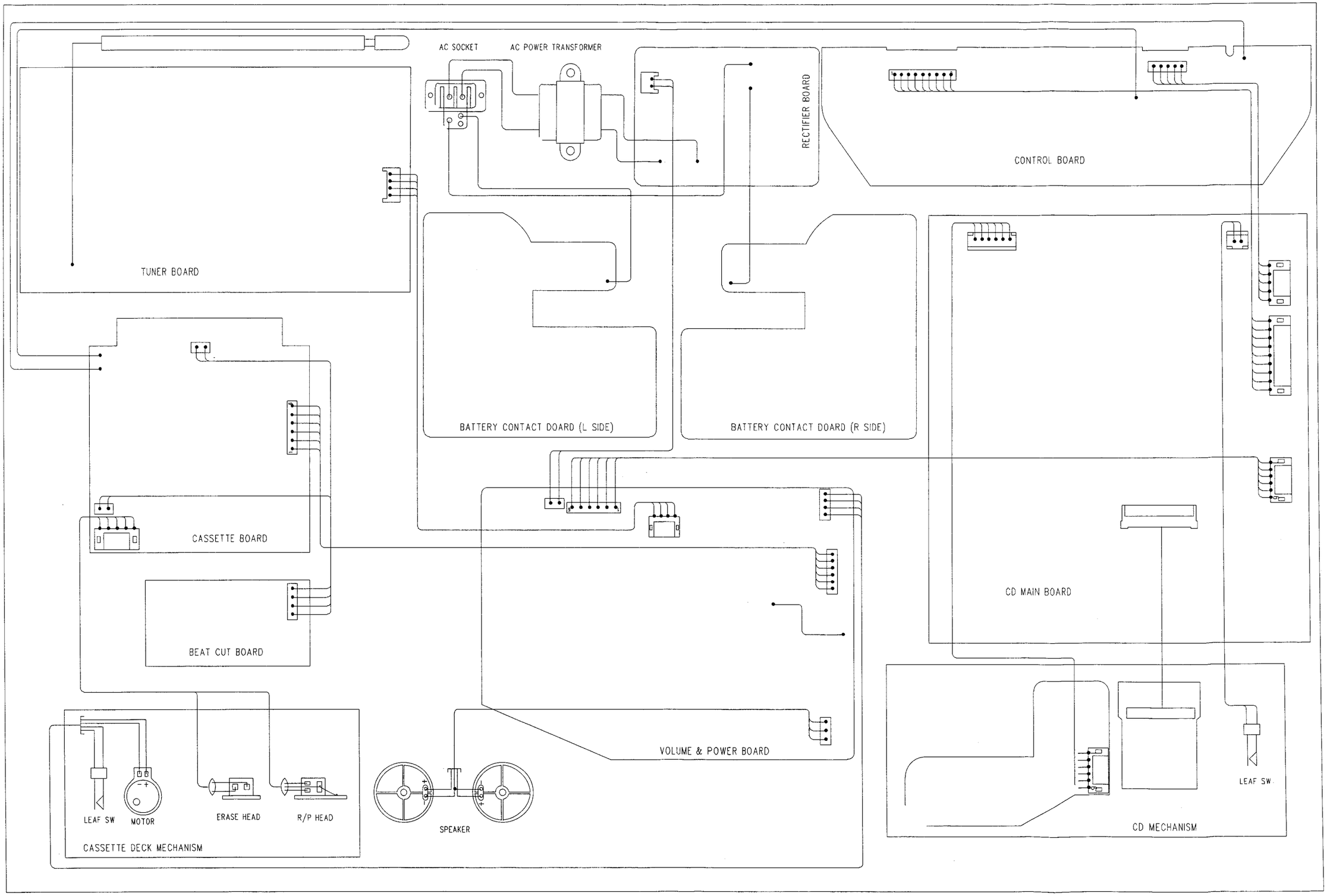
5-1

BLOCK DIAGRAM



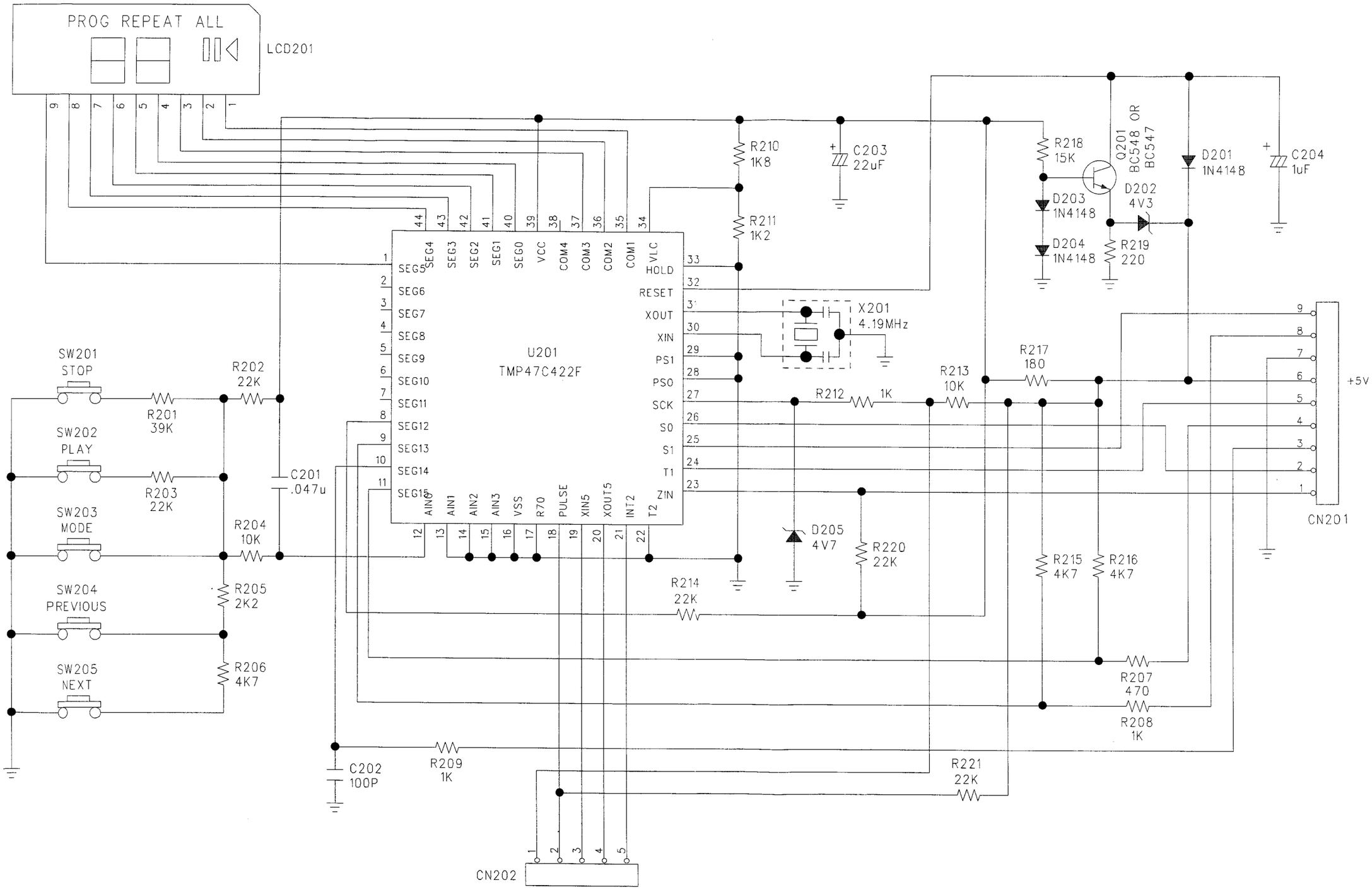
6-1

WIRING DIAGRAM



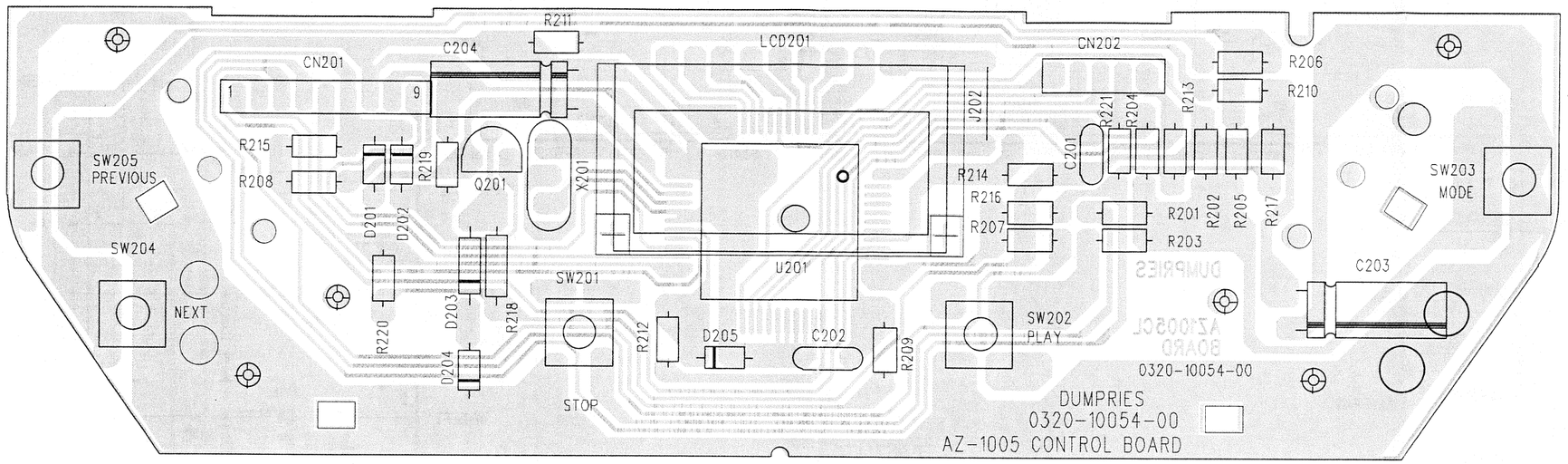
7-1

FRONT BOARD - CIRCUIT DIAGRAM



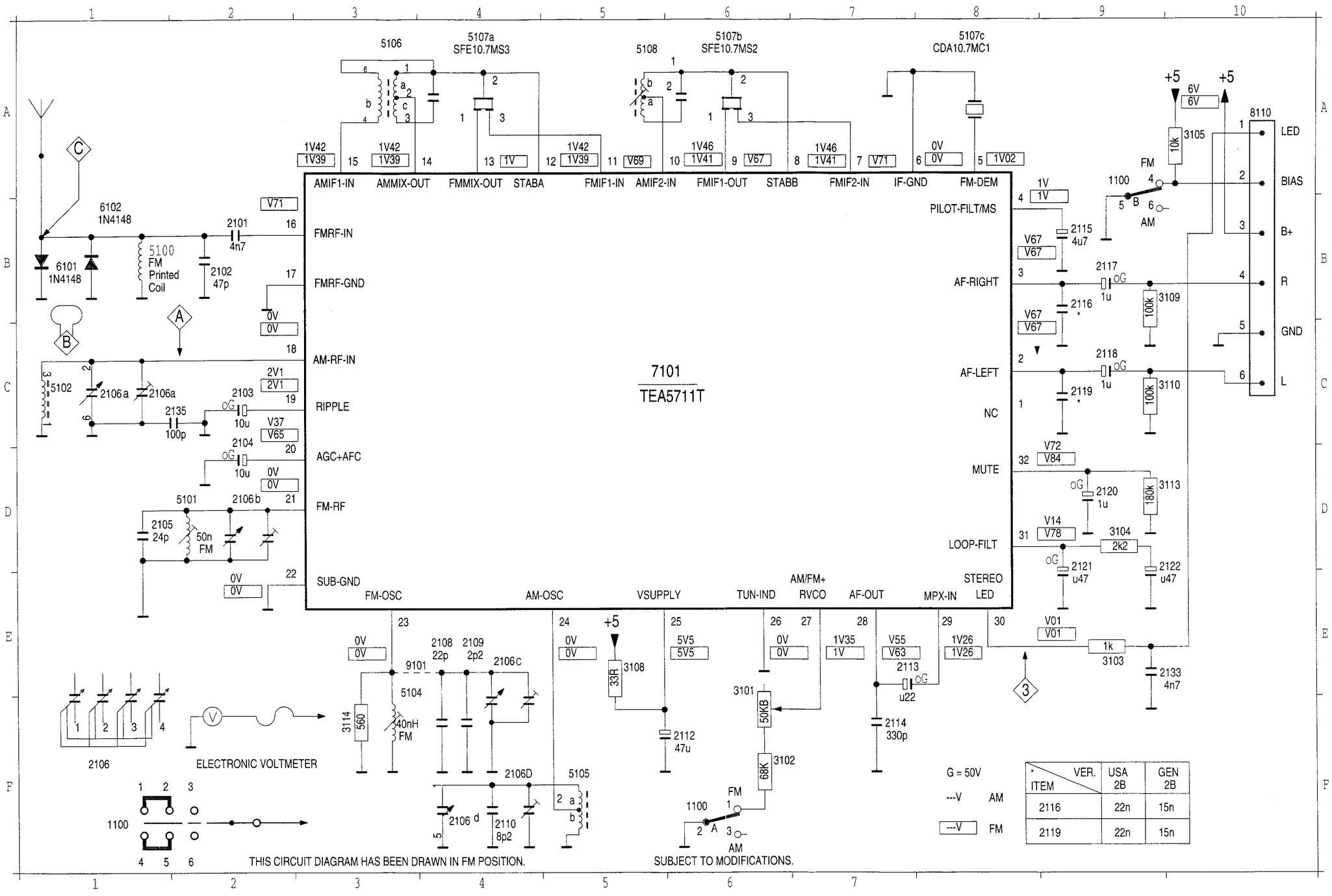
FRONT BOARD - CIRCUIT DIAGRAM

7-2



8-1

TUNER BOARD (FM/MW) - CIRCUIT DIAGRAM



ITEM \ VER.	USA 2B	GEN 2B
2116	22n	15n
2119	22n	15n

1100 F 6
1100 F 9
2101 B 2
2102 B 2
2103 C 2
2104 C 2
2105 D 1
2106 D 2
2106 E 4
2106 E 4
2106 F 1
2106D F 4
2106a F 1
2108 E 4
2109 E 4
2110 E 6
2112 F 7
2113 F 7
2114 F 9
2115 B 9
2116 B 9
2117 B 9
2118 C 9
2119 C 9
2120 D 9
2121 E 10
2122 E 10
2133 E 10
2135 C 2
3101 F 6
3102 F 9
3103 E 9
3104 D 9
3105 A 10
3108 E 5
3109 E 10
3110 C 10
3113 D 10
3114 F 3
5100 B 1
5101 D 2
5102 C 1
5104 C 3
5105 F 5
5106 A 3
5107a A 4
5107b A 6
5107c A 8
5108 A 5
6101 A 1
6102 B 1
7101 C 5
8110 A 10
9101 E 3

All CARBON RESISTORS E12 SERIES 0.25W ±5% UNLESS OTHERWISE STATED.

ALL PLATE CERAMIC CAPACITORS UNLESS OTHERWISE STATED.

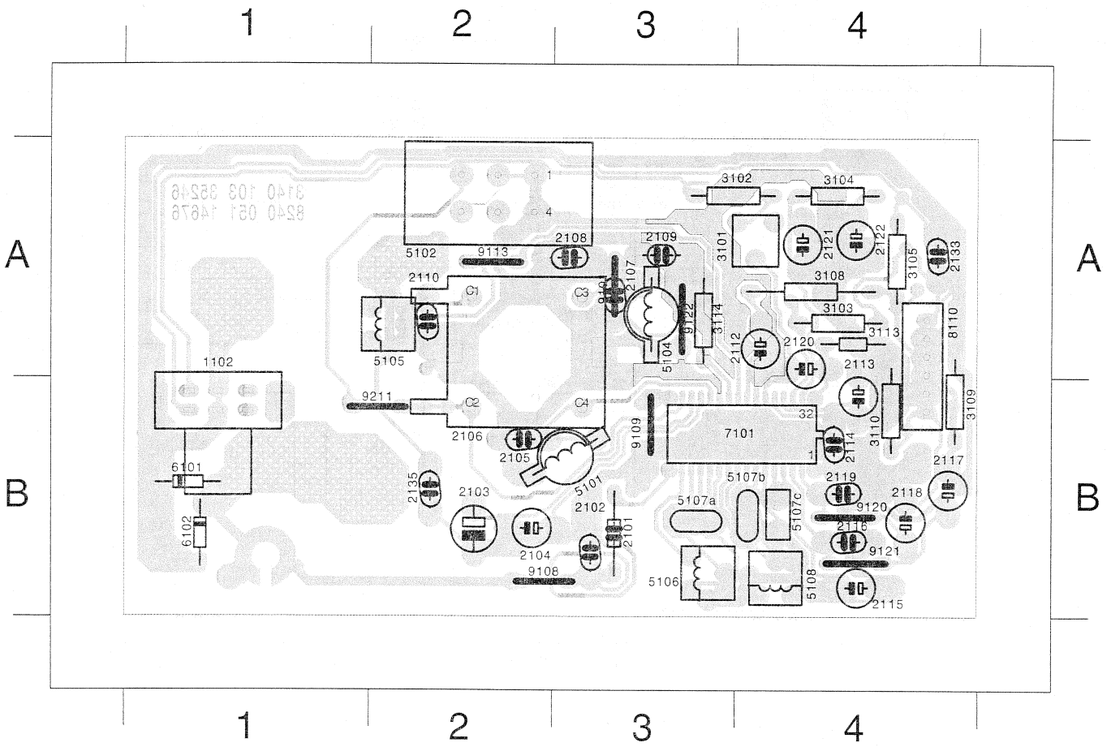
TUBULAR CERAMIC CAPACITOR

MYLAR CAPACITOR

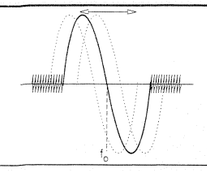
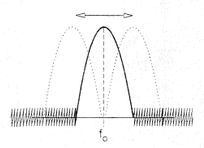
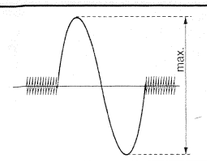
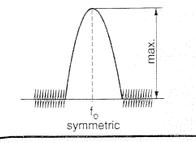
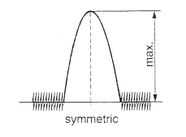
ELECTROLYTIC CAPACITOR

ANALOG TUNER BOARD (ATM3)
FM/MW versions

1102 B 1	2106 A 2	2113 B 4	2119 B 4	3101 A 4	3109 B 4	5104 A 3	5108 B 4	9108 B 2	9211 B 2
2101 B 3	2107 A 3	2114 B 4	2120 A 4	3102 A 3	3110 B 4	5105 A 2	6101 B 1	9109 B 3	
2102 B 3	2108 A 3	2115 B 4	2121 A 4	3103 A 4	3113 A 4	5106 B 3	6102 B 1	9113 A 2	
2103 B 2	2109 A 3	2116 B 4	2122 A 4	3104 A 4	3114 A 3	5107a B 3	7101 B 4	9120 B 4	
2104 B 2	2110 A 2	2117 B 4	2133 A 4	3105 A 4	5101 B 3	5107b B 4	8110 A 4	9121 B 4	
2105 B 2	2112 A 4	2118 B 4	2135 B 2	3108 A 4	5102 A 2	5107c B 4	9101 A 3	9122 A 3	



TUNER ADJUSTMENT TABLE (ATM3 FM/AM - versions with AM-frame aerial)

Waverange	Input Frequency	Input	Set tuned to	Adjust	Measure on	Scope / Counter
OSCILLATOR						
FM 87,5 - 108 MHz	87,35 MHz 108,25 MHz	A Δf = ±500kHz V_{RF} = 100µV	lower band end upper band end	5104 2106 C1	1 or 2	
MW 525 - 1607 kHz (530 - 1710 kHz) [1]	512 kHz (520 kHz) 1635 kHz (1730 kHz)	C Δf = ±30kHz V_{RF} = 100µV	lower band end upper band end	5105 2106 C3	1 or 2	
FM - RF						
FM 87,5 - 108 MHz	87,5 MHz 108 MHz	A Δf = ±500kHz V_{RF} = 10µV	87,5 MHz 108 MHz	5101 2106 C2	1 or 2	
VCO						
FM	98 MHz	A continuous wave V_{RF} = 1 mV	98 MHz	3101	3 7101 pin 30 2k2 4k7 V_{CC}	152 ±1 kHz
AM - IF						
AM	468 kHz connect pin 24 of IC 7101 (AM Osc) with short wire to ground	C Δf = ±15kHz V_{RF} = 10mV	IC 7101 10 100nF 220R IC 7101 14 100nF 220R see remark [2]	5106 5108	1 or 2	
AM -RF						
MW	560 kHz 1500 kHz	B Δf = ±30kHz V_{RF} as low as possible	560 kHz 1500 kHz	5111 2106 C4	1 or 2	

Tuner Adj. ATM3 FM/AM 050796

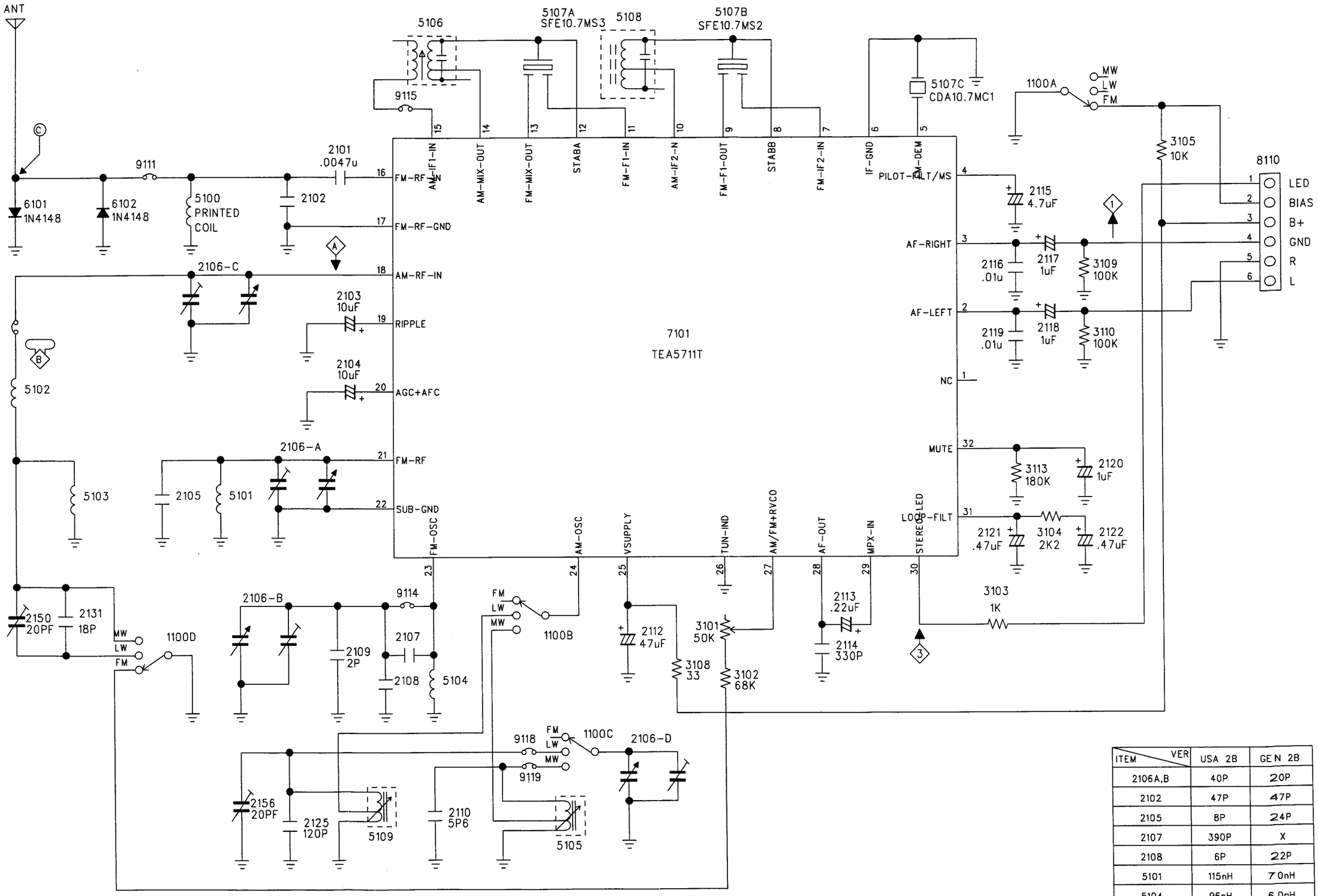
repeat

[1] for USA /17

[2] RC-network serves for damping the IF-filter while adjusting the other one.

8-3

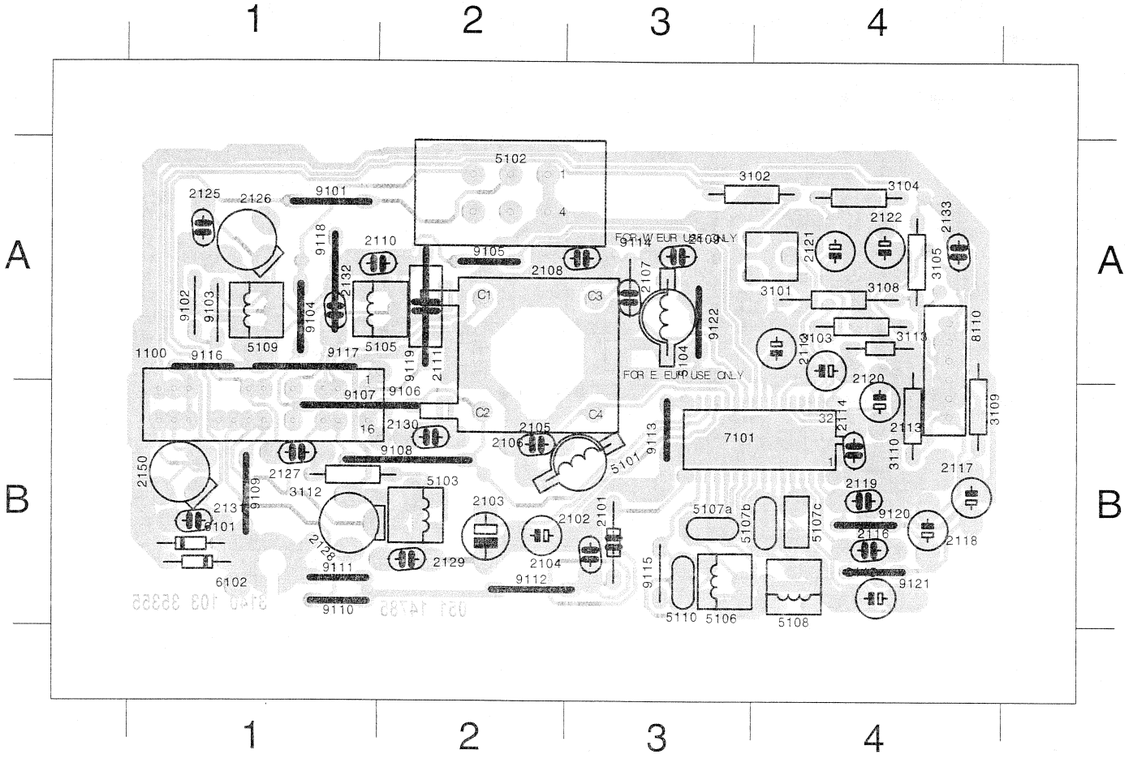
TUNER BOARD (FM/MW/LW) - CIRCUIT DIAGRAM



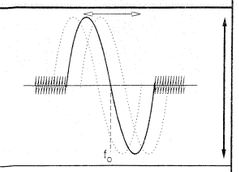
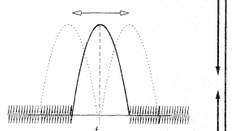
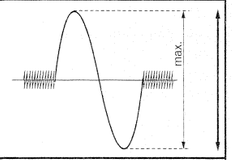
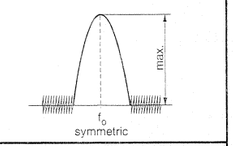
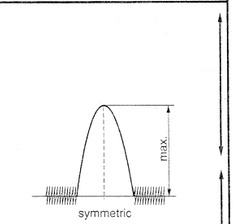
ITEM \ VER	USA 2B	GEN 2B
2106A,B	40P	20P
2102	47P	47P
2105	8P	24P
2107	390P	X
2108	6P	22P
5101	115nH	70nH
5104	96nH	60nH
9114	X	✓

ANALOG TUNER BOARD (ATM3)
FM/MW/LW versions

1100 B 1	2109 A 3	2118 B 4	2129 B 2	3104 A 4	5103 B 2	5110 B 3	9105 A 2	9114 A 3
2101 B 3	2110 A 2	2119 B 4	2130 B 2	3105 A 4	5104 A 3	6101 B 1	9106 B 1	9115 B 3
2102 B 3	2111 A 2	2120 A 4	2131 B 1	3108 A 4	5105 A 2	6102 B 1	9107 B 1	9116 A 1
2103 B 2	2112 A 4	2121 A 4	2132 A 1	3109 B 4	5106 B 3	7101 B 4	9108 B 2	9117 A 1
2104 B 2	2113 B 4	2122 A 4	2133 A 4	3110 B 4	5107a B 3	8110 A 4	9109 B 1	9118 A 1
2105 B 2	2114 B 4	2125 A 1	2150 B 1	3112 B 1	5107b B 4	9101 A 1	9110 B 1	9119 A 2
2106 A 2	2115 B 4	2126 A 1	3101 A 4	3113 A 4	5107c B 4	9102 A 1	9111 B 1	9120 B 4
2107 A 3	2116 B 4	2127 B 1	3102 A 3	5101 B 3	5108 B 4	9103 A 1	9112 B 2	9121 B 4
2108 A 3	2117 B 4	2128 B 2	3103 A 4	5102 A 2	5109 A 1	9104 A 1	9113 B 3	9122 A 3



TUNER ADJUSTMENT TABLE (ATM3 FM/LW/MW- versions with AM-frame aerial)

Waverange	Input Frequency	Input	Set tuned to	Adjust	Measure on	Scope / Counter
OSCILLATOR						
FM 87,5 - 108 MHz (65 - 108 MHz) [1]	87,35 MHz (64,7 MHz)	A $\Delta f = \pm 500$kHz $V_{RF} = 100\mu V$	lower band end	5104	1 or 2	
	108,25 MHz		upper band end	2106 C1		
MW 525 - 1607 kHz (530 - 1710 kHz) [2]	512 kHz (520 kHz)	C $\Delta f = \pm 30$kHz $V_{RF} = 100\mu V$	lower band end	5105	1 or 2	
	1635 kHz (1730 kHz)		upper band end	2106 C3		
LW [3] 148,5 - 284 kHz	147 kHz		lower band end	5109		
	291 kHz		upper band end	2126		
FM - RF						
FM 87,5 - 108 MHz (65 - 108 MHz) [1]	87,5 MHz (65 MHz)	A $\Delta f = \pm 500$kHz $V_{RF} = 10\mu V$	87,5 MHz (65 MHz)	5101	1 or 2	
	108 MHz		108 MHz	2106 C2		
VCO						
FM	98 MHz	A continuous wave $V_{RF} = 1$ mV	98 MHz	3103	3 7101 pin 30 2k2 4k7 V_{CC}	152 ±1 kHz
AM - IF						
AM	468 kHz connect pin 24 of IC 7101 (AM Osc) with short wire to ground	C $\Delta f = \pm 15$kHz $V_{RF} = 10$mV	IC 7101 10 100nF 220R	5106	1 or 2	
			IC 7101 14 100nF 220R see remark [4]	5108		
AM -RF						
MW	560 kHz	B $\Delta f = \pm 30$kHz V_{RF} as low as possible	560 kHz	5111	1 or 2	
	1500 kHz		1500 kHz	2106 C4		
LW [3]	170 kHz		170 kHz	5112		
	260 kHz		260 kHz	2150		

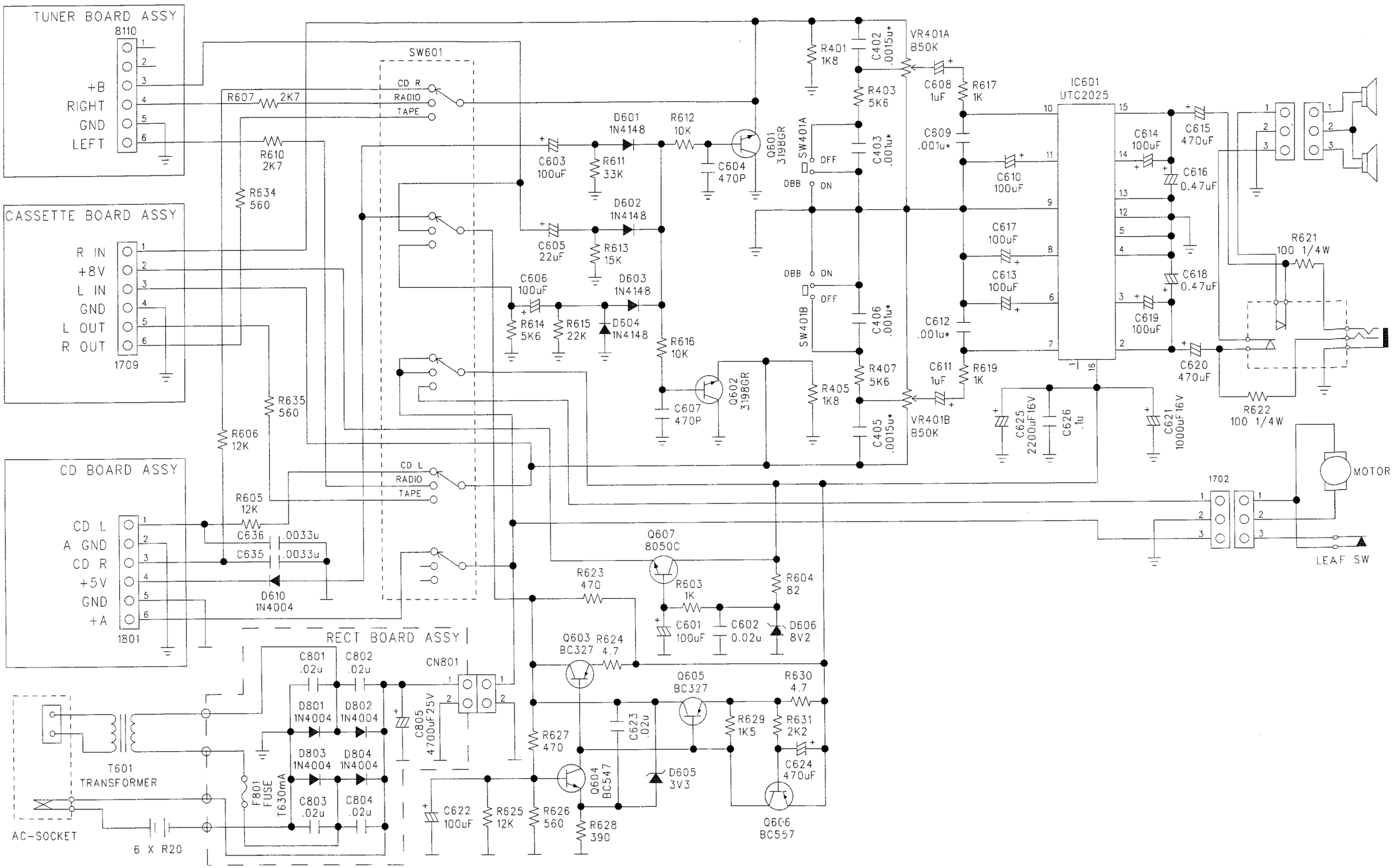
Tuner Adj. ATM3 FM/LW/MW 06/05/99

repeat

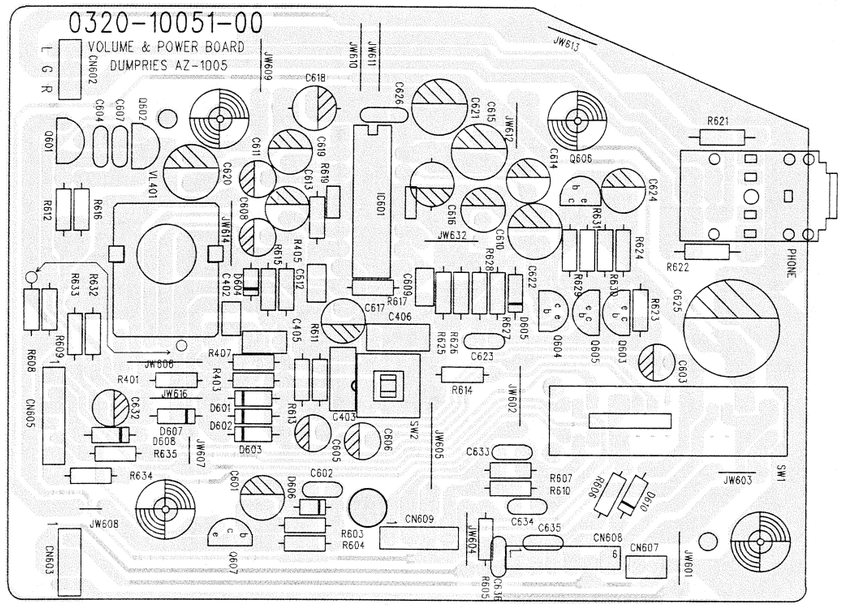
[1] for East Europe /14 [2] for USA /17 [3] LW not for all versions
[4] RC-network serves for damping the IF-filter while adjusting the other one.

9-1

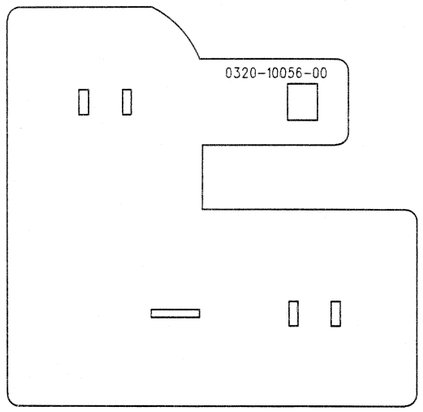
MAIN BOARD - CIRCUIT DIAGRAM

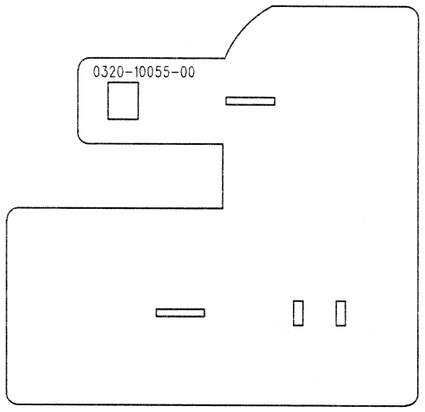


MAIN BOARD - LAYOUT DIAGRAM

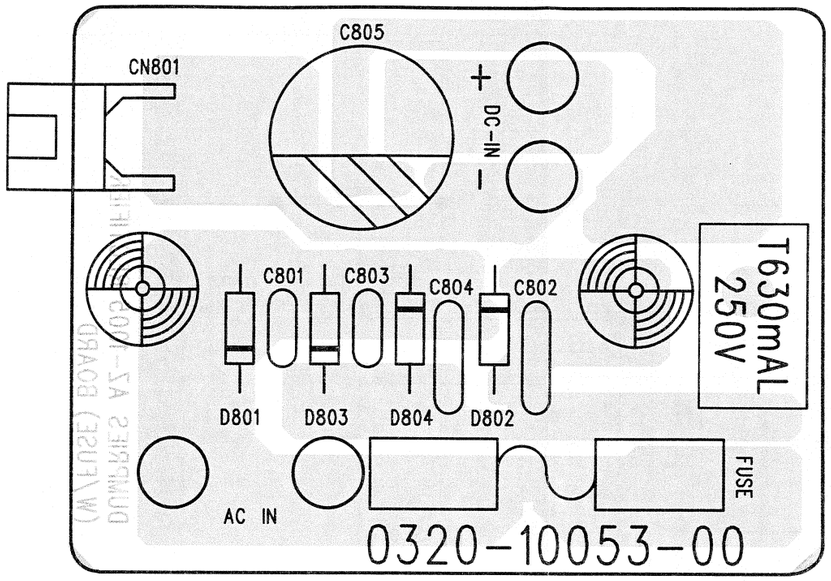


BATTERY BOARD (L & R) - LAYOUT DIAGRAM

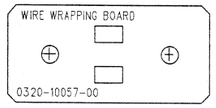




RECTIFIER BOARD - LAYOUT DIAGRAM

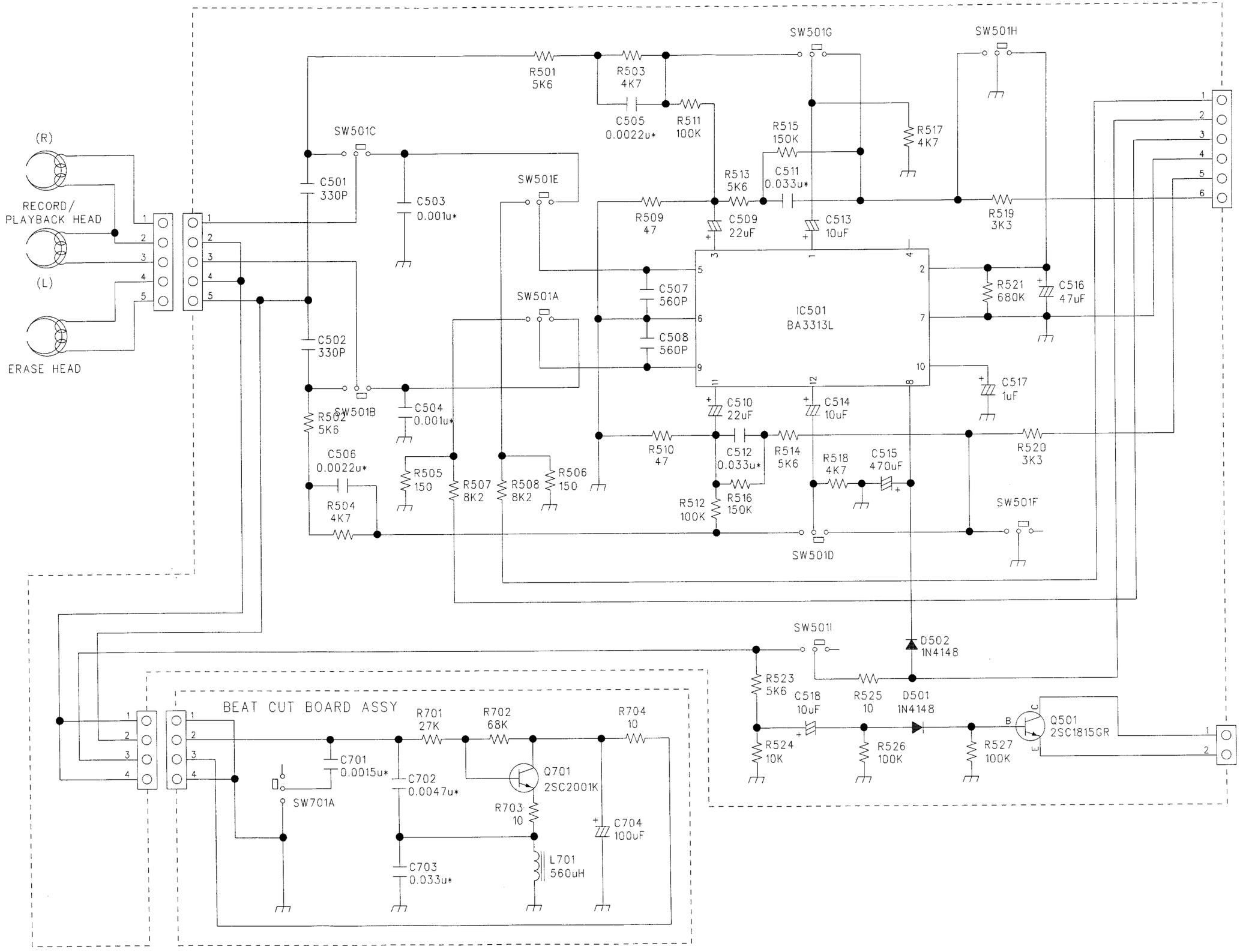


WIRE WRAPPING BOARD - LAYOUT DIAGRAM

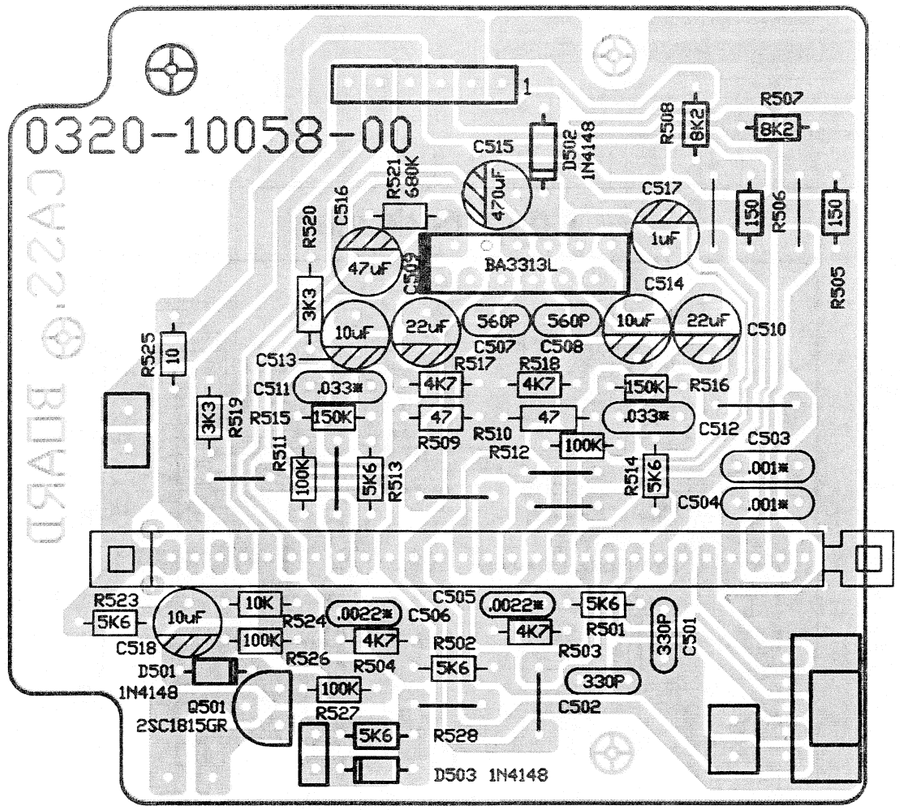


10-1

RECORDER BOARD - CIRCUIT DIAGRAM



RECORDER BOARD - LAYOUT DIAGRAM



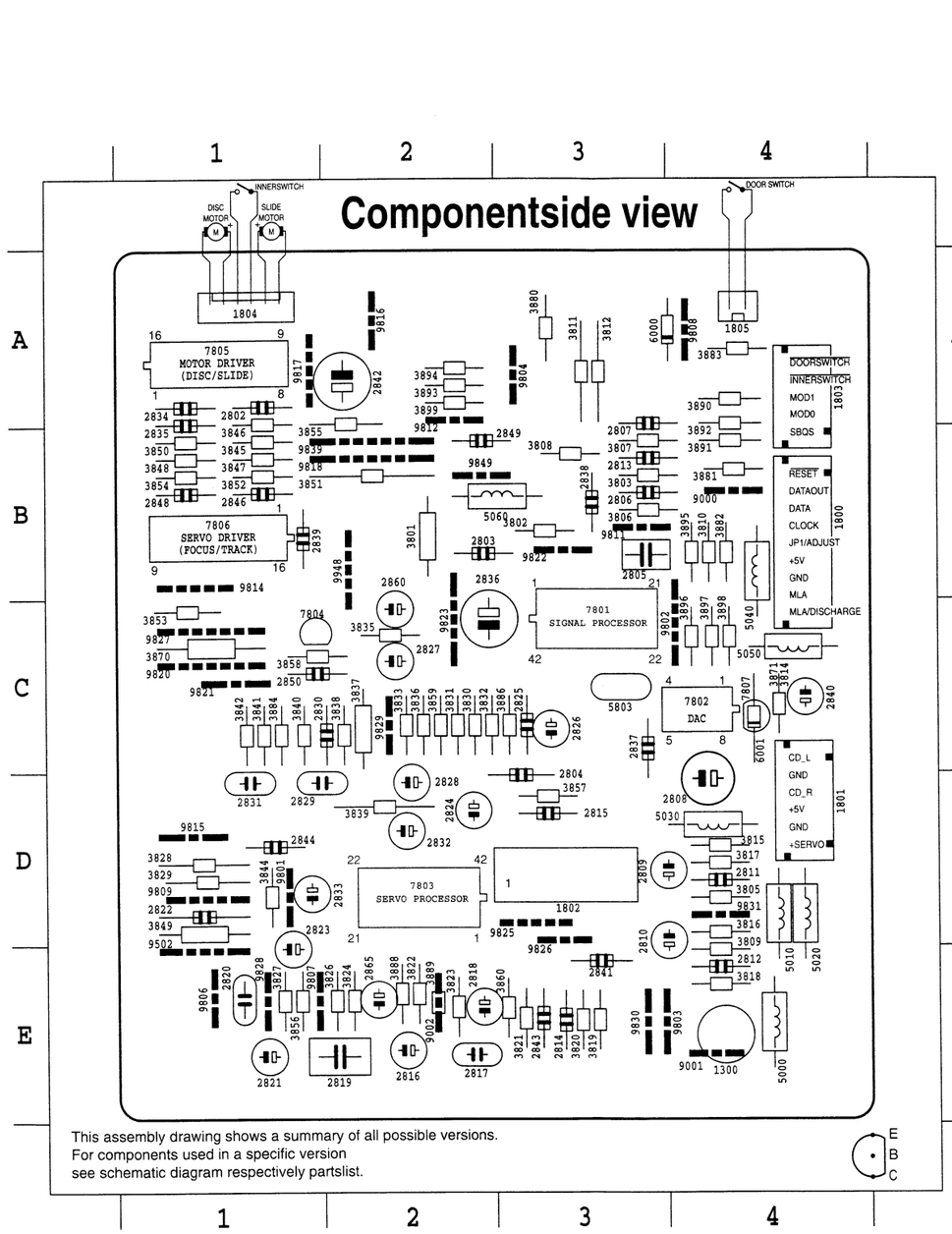
CASSETTE ADJUSTMENT

Adjustment	Cassette	SK	Deck 1	Measure on	Read on	Adjust with	Adjust to
Azimuth	6.3 kHz	Tape	Play	H/P Jack	mV meter	Loose screw of R/P head	max.
Motor Speed	3 kHz (Mtt-111N OR EQUV)	Tape	Play	H/P Jack	Wow and flutter meter	Preset VR	**a

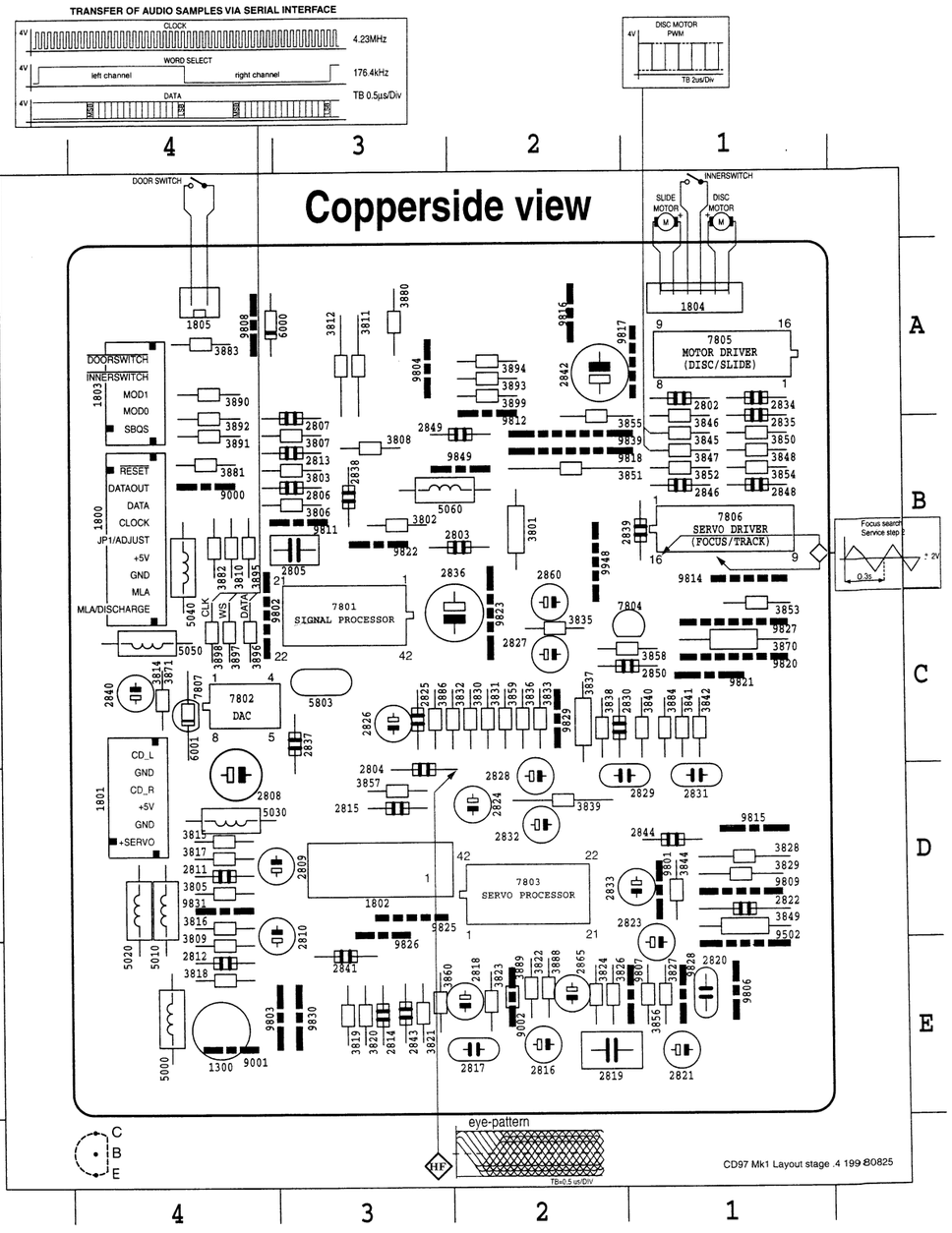
**a The maximum permissible speed deviation is ± 3%.
Morever, the wow and flutter value can be read.

CD97 (DA11 MK I) - LAYOUT DIAGRAM

11-1

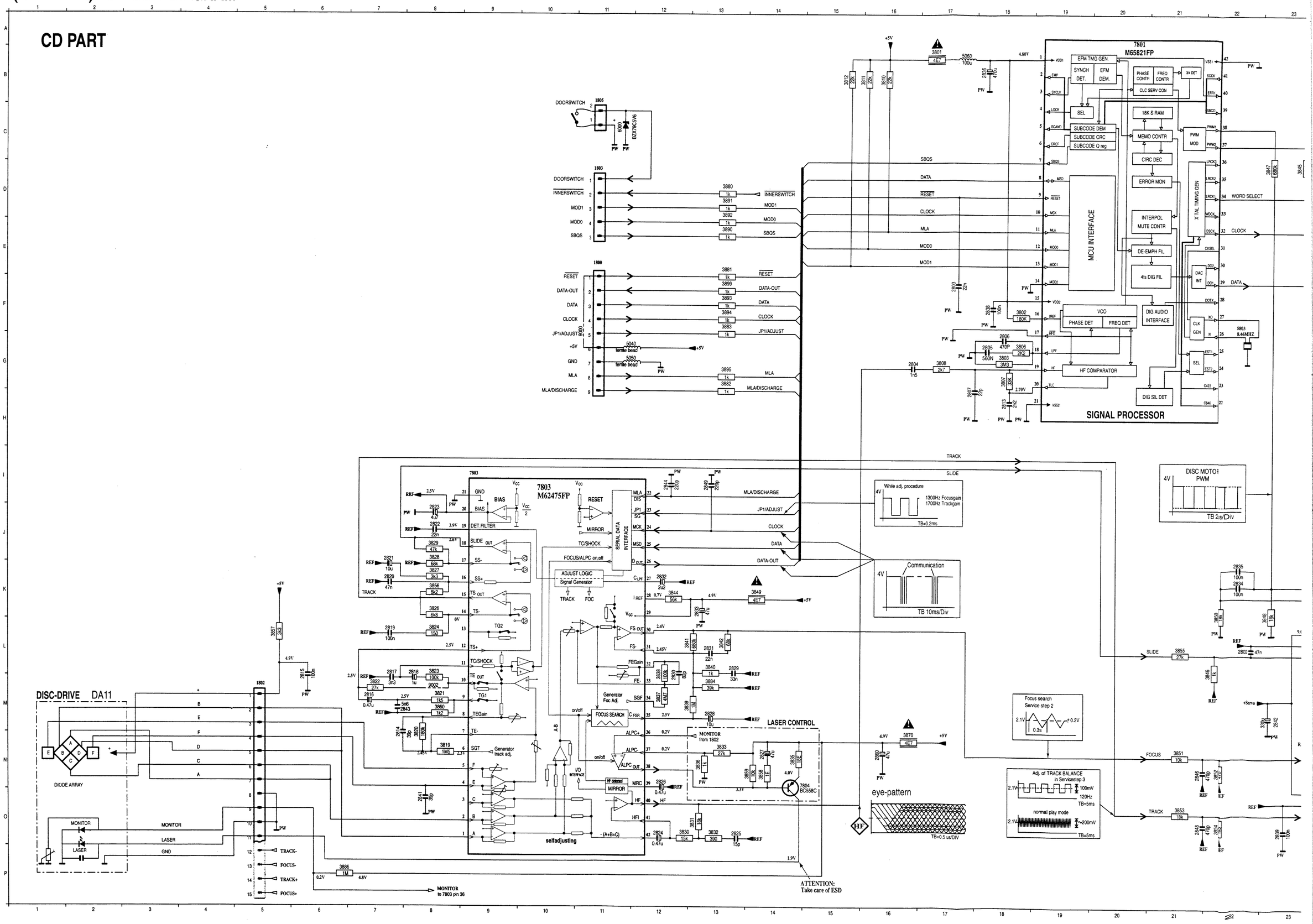


1300 E 4	3807 B 3	3891 B 4
1800 B 4	3808 B 3	3892 A 4
1801 D 4	3809 E 4	3893 A 2
1802 D 3	3810 B 4	3894 A 2
1803 A 4	3811 A 3	3895 B 4
1804 A 1	3812 A 3	3896 C 4
1805 A 4	3814 C 4	3897 C 4
2802 A 1	3815 D 4	3898 C 4
2803 B 2	3816 D 4	3899 A 2
2804 D 3	3817 D 4	5000 E 4
2805 B 3	3818 E 4	5010 D 4
2806 B 3	3819 E 3	5020 D 4
2807 A 3	3820 E 3	5030 D 4
2808 D 4	3821 E 3	5040 B 4
2809 D 4	3822 E 2	5050 C 4
2810 D 4	3823 E 2	5060 B 3
2811 D 4	3824 E 2	5803 C 3
2812 E 4	3826 E 2	6000 A 4
2813 B 3	3827 E 1	6001 C 4
2814 E 3	3828 D 1	7802 C 4
2815 D 3	3829 D 1	7804 C 1
2816 E 2	3830 C 2	7805 A 1
2817 E 2	3831 C 2	7806 B 1
2818 E 2	3832 C 2	7807 C 4
2819 E 2	3833 C 2	9000 B 4
2820 E 1	3835 C 2	9001 E 4
2821 E 1	3836 C 2	9002 E 2
2822 D 1	3837 C 2	9502 E 1
2823 E 1	3838 C 2	9801 D 1
2824 D 2	3839 D 2	9802 C 4
2825 C 3	3840 C 1	9803 E 3
2826 C 3	3841 C 1	9804 A 3
2827 C 2	3842 C 1	9806 E 1
2828 D 2	3844 D 1	9807 E 1
2829 D 1	3845 B 1	9808 A 4
2830 C 2	3846 A 1	9809 D 1
2831 D 1	3847 B 1	9811 B 3
2832 D 2	3848 B 1	9812 A 2
2833 D 1	3849 D 1	9814 B 1
2834 A 1	3850 B 1	9815 D 1
2835 A 1	3851 B 2	9816 A 2
2836 C 2	3852 B 1	9817 A 1
2837 C 3	3853 C 1	9818 B 2
2838 B 3	3854 B 1	9820 C 1
2839 B 1	3855 A 2	9821 C 1
2840 C 4	3856 E 1	9822 B 3
2841 E 3	3857 D 3	9823 C 2
2842 A 2	3858 C 1	9825 D 3
2843 E 3	3859 C 2	9826 D 3
2844 D 1	3860 E 3	9827 C 1
2846 B 1	3870 C 1	9828 E 1
2848 B 1	3871 C 4	9829 C 2
2849 B 2	3880 A 3	9830 E 3
2850 C 1	3881 B 4	9831 D 4
2860 C 2	3882 B 4	9839 B 2
2865 E 2	3883 A 4	9849 B 2
3801 B 2	3884 C 1	9948 B 2
3802 B 3	3886 C 3	7801 C 3
3803 B 3	3888 E 2	7803 D 2
3805 D 4	3889 E 2	
3806 B 3	3890 A 4	

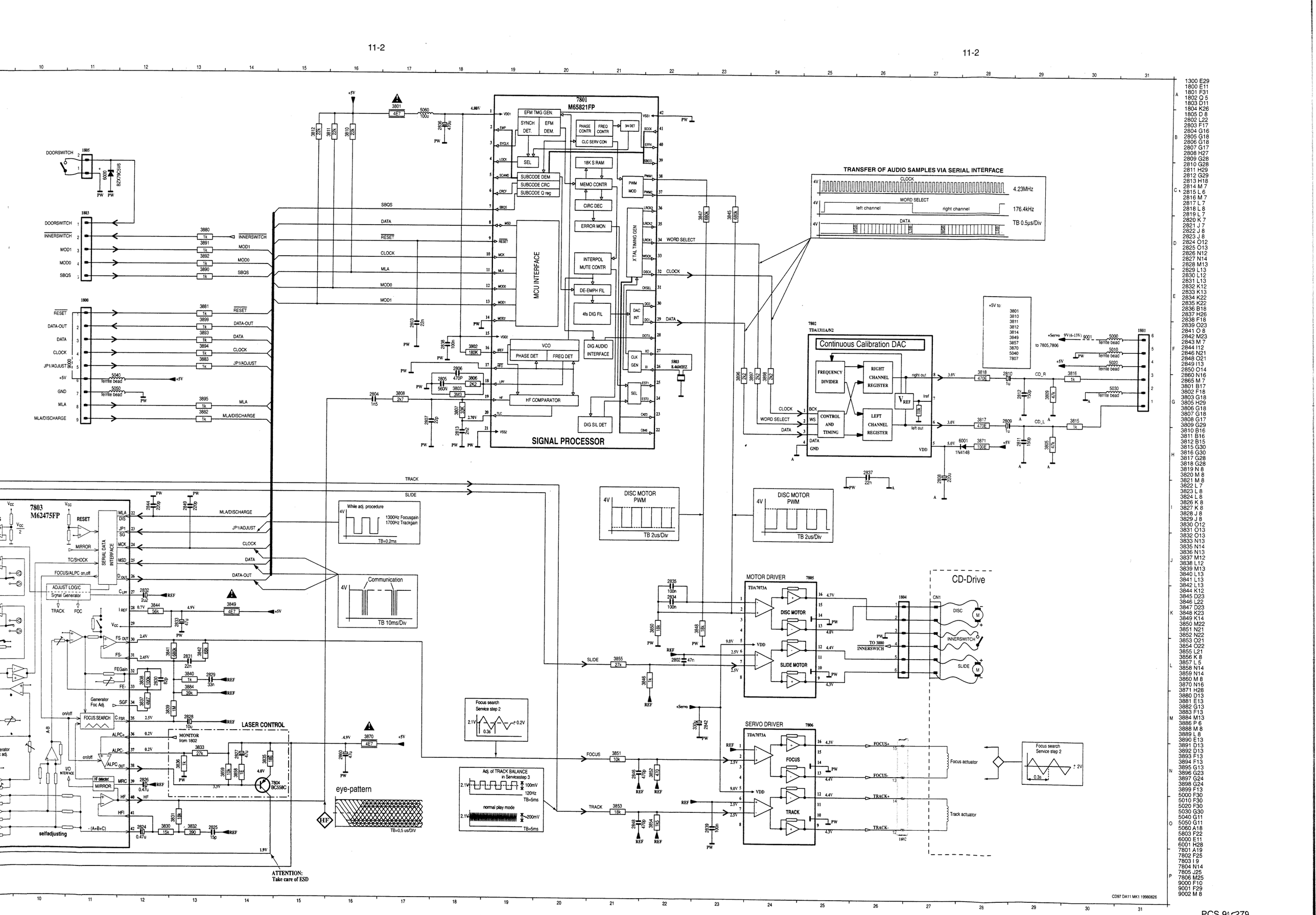


11-2

CD PART


7801
M65821FP
EFM TMG GEN.
SYNCH DET.
EFM DEM.
PHASE CONTR
FREQ CONTR
3/4 DET
CLC SERV CON
SEL
18K S RAM
SUBCODE DEM
SUBCODE CRC
SUBCODE Q reg
MEMO CONTR
CIRC DEC
ERROR MON
PWM MOD
INTERPOL MUTE CONTR
DE-EMPH FIL
41fs DIG FIL
MCU INTERFACE
X'TAL TIMING GEN
DAC INT.
CLK GEN
VCO
PHASE DET
FREQ DET
DIG AUDIO INTERFACE
HF COMPARATOR
DIG SIL DET
SIGNAL PROCESSOR
SBQS
DATA
RESET
CLOCK
MLA
MOD0
MOD1
WORD SELECT
CLOCK
DATA
DOORSWITCH
INNERSWITCH
MOD1
MOD0
SBQS
RESET
DATA-OUT
DATA
CLOCK
JP1/ADJUST
+5V
GND
MLA
MLA/DISCHARGE
7803
M62475FP
BIAS
DET.FILTER
SLIDE OUT
SS-
SS+
TS OUT
TS-
TG2
TS+
TC/SHOCK
TE OUT
TG1
TEGain
TE-
SGT
Generator track adj.
RESET
MIRROR
FOCUS/ALPC on.off
ADJUST LOGIC
Signal Generator
TRACK
FOC
SERIAL DATA INTERFACE
FS OUT
FS-
FEGain
FE-
SGF
Generator Foc Adj.
FOCUS SEARCH
ALPC+
ALPC-
ALPC OUT
I/O INTERFACE
HF detect
MRC
HF
HFI
A-B
- (A+B+C)
selfadjusting
LASER CONTROL
MONITOR from 1802
7804 BC558C
DISC-DRIVE DA11
DIODE ARRAY
MONITOR
LASER
GND
TRACK-
FOCUS-
TRACK+
FOCUS+
MONITOR to 7803 pin 36
ATTENTION: Take care of ESD
TRACK
SLIDE
While adj. procedure
1300Hz Focusgain
1700Hz Trackgain
TB=0.2ms
Communication
TB 10ms/Div
eye-pattern
TB=0.5 us/DIV
Focus search
Service step 2
Adj. of TRACK BALANCE in Servicestep 3
100mV
120Hz
TB=5ms
normal play mode
200mV
TB=5ms
DISC MOTOR PWM
TB 2s/Div
WORD SELECT
CLOCK
DATA
FOCUS
TRACK
SLIDE
+Servo

11-2



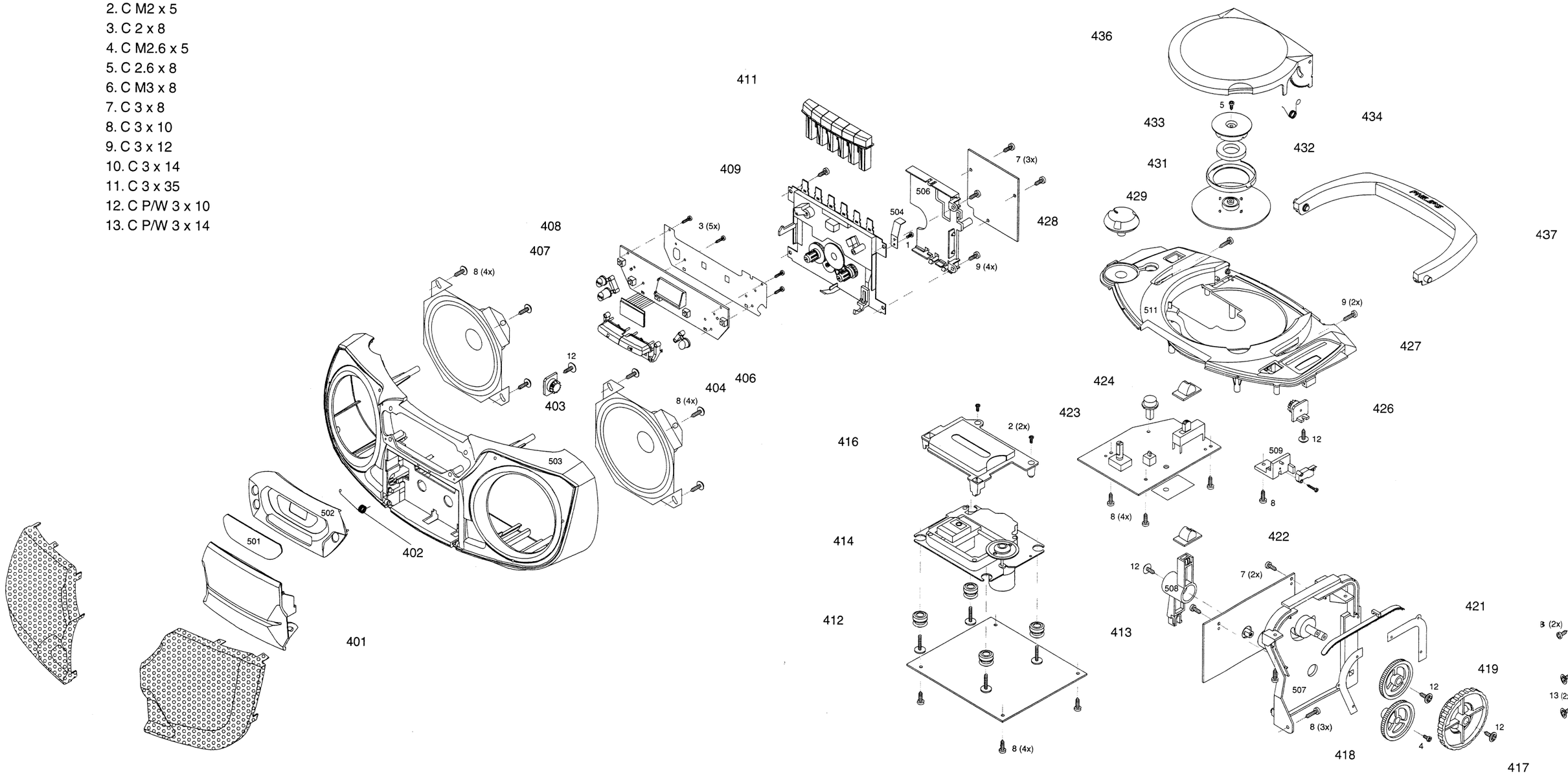
1300 E29
1800 E11
1801 F31
1802 Q 5
1803 D11
1804 K26
1805 D 8
2802 L22
2803 F17
2804 G16
2805 G18
2806 G18
2807 G17
2808 H27
2809 G28
2810 G28
2811 H29
2812 G29
2813 H18
2814 M 7
2815 L 6
2816 M 7
2817 L 7
2818 L 8
2819 L 7
2820 K 7
2821 J 7
2822 J 8
2823 J 8
2824 O12
2825 O13
2826 N12
2827 N14
2828 M13
2829 L13
2830 L12
2831 L13
2832 K12
2833 K13
2834 K22
2835 K22
2836 B18
2837 H26
2838 F18
2839 O23
2841 O 8
2842 M23
2843 M 7
2844 I12
2846 N21
2848 O21
2849 I13
2850 O14
2860 N16
2865 M 7
3801 B17
3802 F18
3803 G18
3805 H29
3806 G18
3807 G18
3808 G17
3809 G29
3810 B16
3811 B16
3812 B15
3815 G30
3816 G30
3817 G28
3818 G28
3819 N 8
3820 M 8
3821 M 8
3822 L 7
3823 L 8
3824 L 8
3826 K 8
3827 K 8
3828 J 8
3829 J 8
3830 O12
3831 O13
3832 O13
3833 N13
3835 N14
3836 N13
3837 M12
3838 L12
3839 M13
3840 L13
3841 L13
3842 L13
3844 K12
3845 D23
3846 L22
3847 D23
3848 K23
3849 K14
3850 M22
3851 N21
3852 N22
3853 O21
3854 O22
3855 L21
3856 K 8
3857 L 5
3858 N14
3859 N14
3860 M 8
3870 N16
3871 H28
3880 D13
3881 E13
3882 G13
3883 F13
3884 M13
3886 P 6
3888 M 8
3889 L 8
3890 E13
3891 D13
3892 D13
3893 F13
3894 F13
3895 G13
3896 G23
3897 G24
3898 G24
3899 F13
5000 F30
5010 F30
5020 F30
5030 G30
5040 G11
5050 G11
5060 A18
5803 F22
6000 E11
6001 H28
7801 A19
7802 P25
7803 I 9
7804 N14
7805 J25
7806 M25
9000 F10
9001 F29
9002 M 8

EXPLODED VIEW DIAGRAM - CABINET

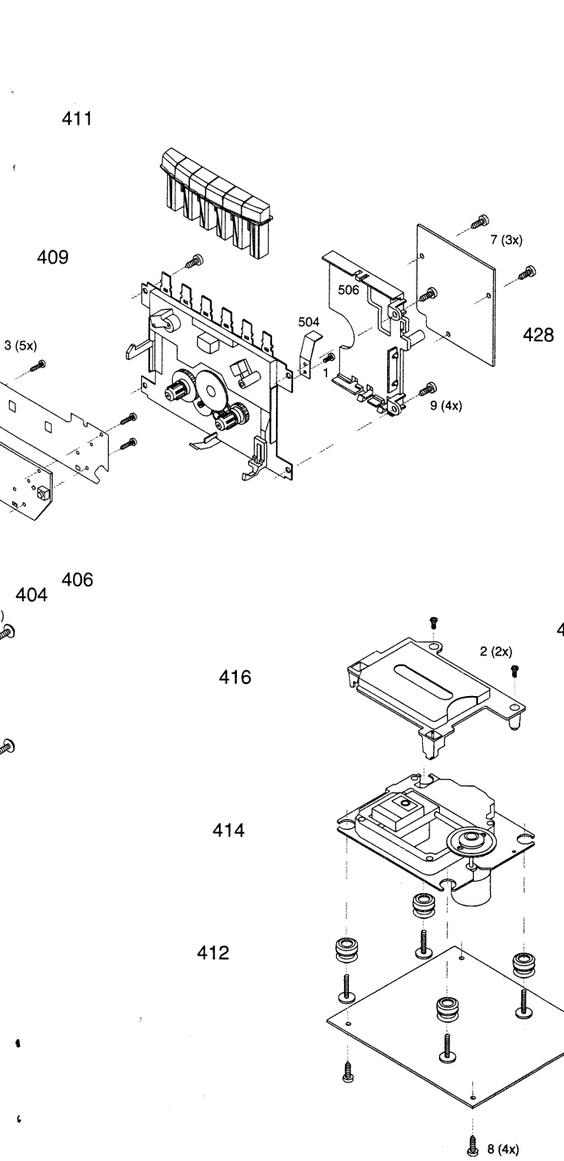
12-1

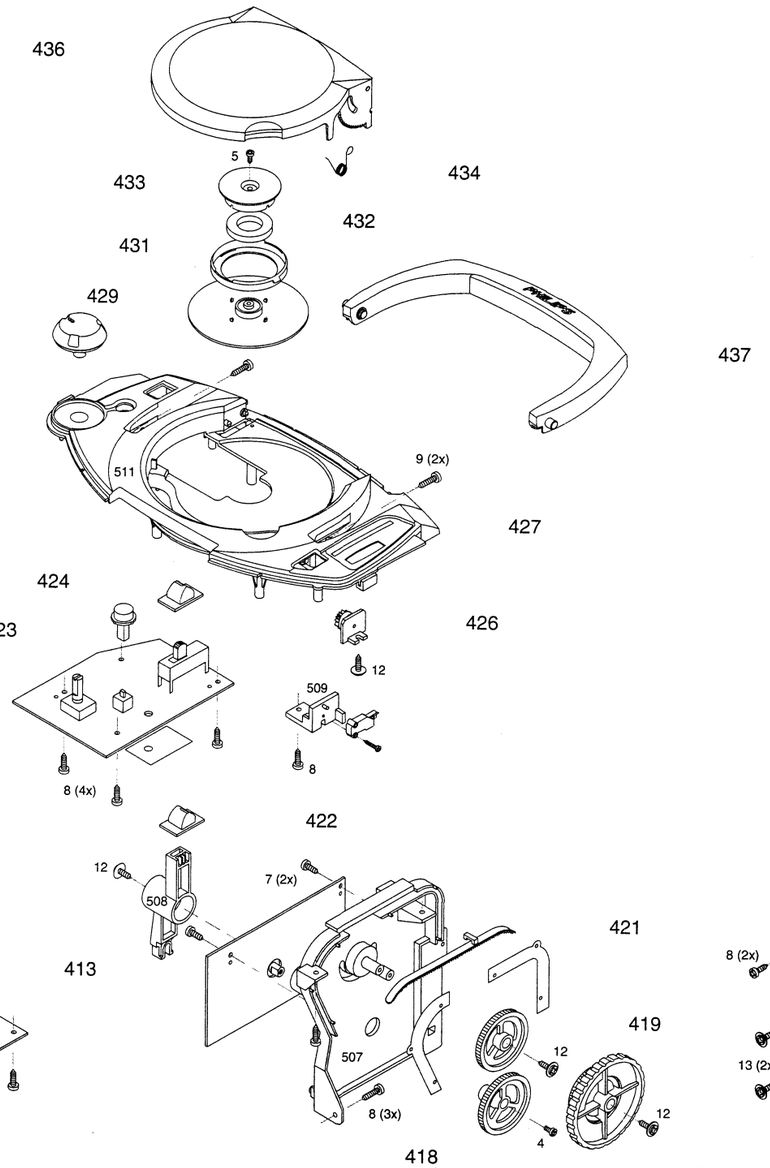
SCREW LIST

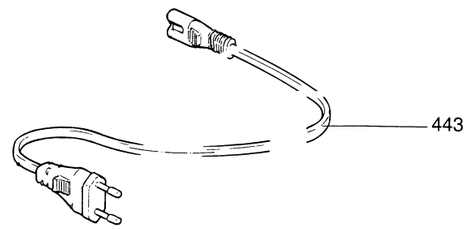
1. C M2 x 3
2. C M2 x 5
3. C 2 x 8
4. C M2.6 x 5
5. C 2.6 x 8
6. C M3 x 8
7. C 3 x 8
8. C 3 x 10
9. C 3 x 12
10. C 3 x 14
11. C 3 x 35
12. C P/W 3 x 10
13. C P/W 3 x 14

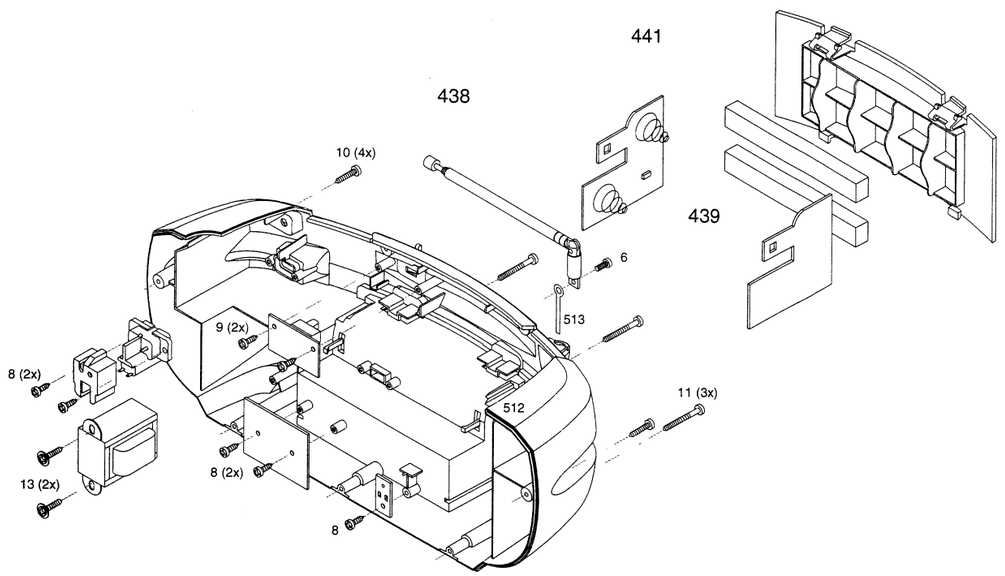


12-1


411
409
3 (5x)
7 (3x)
506
504
1
428
9 (4x)
404
406
416
2 (2x)
414
412
8 (4x)


436
5
433
434
431
432
429
437
511
9 (2x)
427
424
423
426
12
509
8
8 (4x)
422
12
508
7 (2x)
421
413
507
419
12
8 (3x)
4
12
418
417


443


442
441
438
439
10 (4x)
6
513
9 (2x)
8 (2x)
512
11 (3x)
13 (2x)
8 (2x)
8

MECHANICAL PARTSLIST - CABINET

401	4822 443 11269	Cass Door (For -/00/05)	437	4822 498 10743	Handle
401	4822 443 11278	Cass Door (For -/17)	438	4822 303 14022	Telescopic Aerial
402	4822 492 11789	Cass Door Spring	439	4822 492 11204	Battery Spring (+ve)
403	4822 522 10778	Cass Door Gear	441	4822 492 11641	Battery Contact Spring (-ve)
404	4822 410 12516	CD Knob Set A (Play/Stop)	442	4822 442 01909	Battery Door
406	4822 410 12518	CD Knob Set B (Mode)	443	4822 321 10249	Mains Cord (For -/00)
407	4822 410 12517	CD Knob Set B (Rew/F.F.)	443	4822 321 10886	Mains Cord (For -/05)
408	4822 402 11365	LCD Bracket	443	4822 321 11466	Mains Cord (For -/17)
409	4822 691 10806	Tape Deck TK20FX-V613-008		4822 256 90463	Ferrite Bar Holder
411	4822 410 12525	Cass Knob Kit		4822 725 26212	Instr Manual (For -/00/05)
412	4822 529 10386	Damper Rubber (30 DEG)		4822 736 17106	Instr Manual (For -/17)
413	4822 529 10387	Damper Rubber (40 DEG)			
414	4822 691 10654	CD Drive CD94V5T1			
416	4822 442 01905	Lens Cover			
417	4822 410 12519	Tuning Knob			
418	4822 528 11359	Dial Drum			
419	4822 522 10776	Connector Gear			
421	4822 450 10688	Dial Pointer			
422	4822 410 12521	Band Knob			
423	4822 410 12524	DBB Knob			
424	4822 410 12522	Function Knob			
426	4822 522 10777	CD Door Gear			
427	4822 450 10689	Dail Lens			
428	4822 410 12523	Volume Knob			
429	4822 466 12255	Chucking Plate			
431	4822 532 13163	Chucking Plate Ring			
432	4822 526 10731	Magnet			
433	4822 256 10586	Chucking Plate Holder			
434	4822 492 11201	CD Door Spring			
436	4822 443 11268	CD Door			

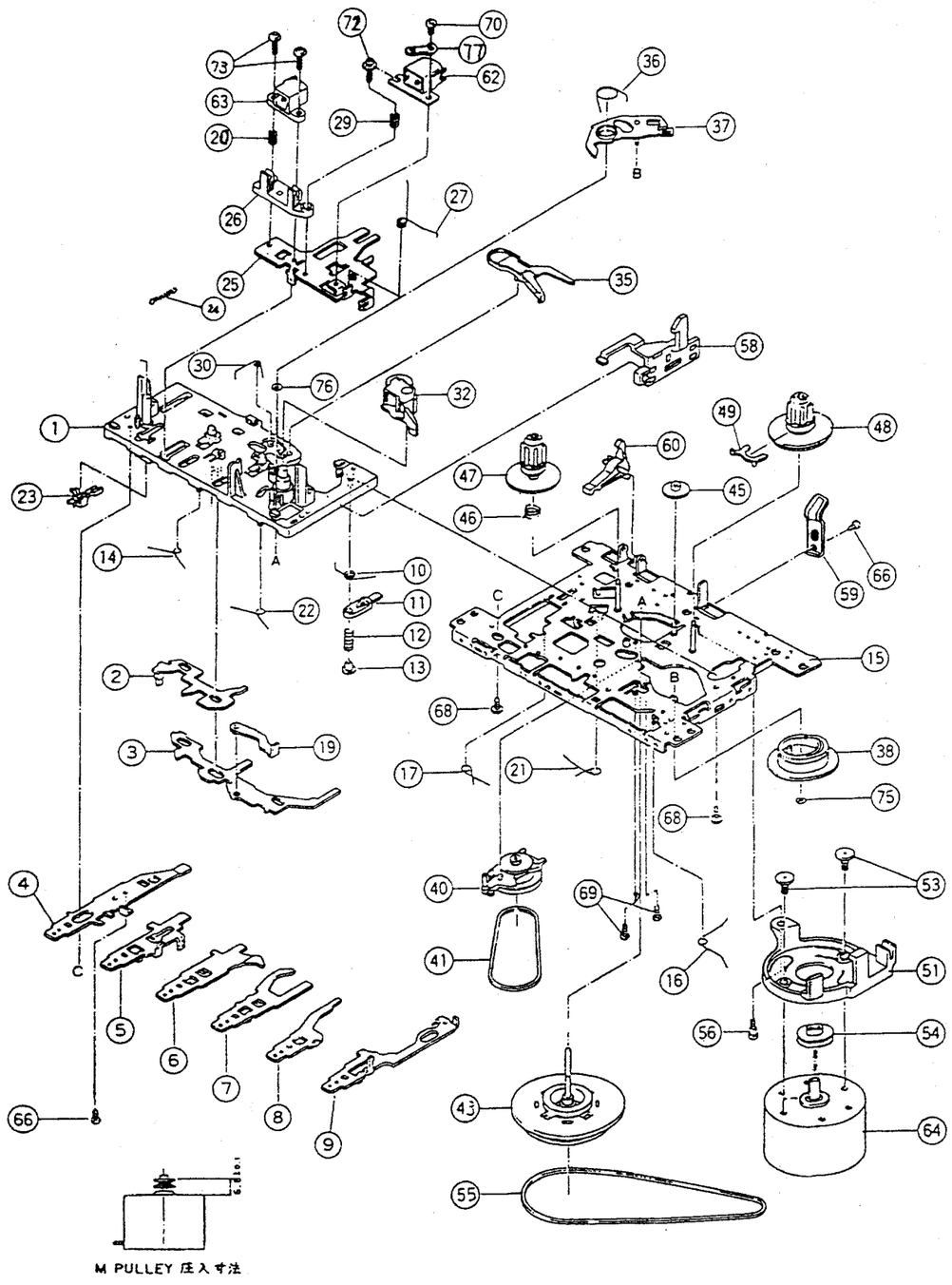
Note : Only those parts mentioned in the list are normal service parts.

MECHANICAL PARTSLIST - TAPE DECK

32	4822 403 20244	Roller Arm Assy
41	4822 358 31323	F. Belt
55	4822 358 31322	Main Belt
58	4822 403 71219	Eject Belt
62	4822 249 10475	R/P Head
63	4822 249 10531	E. Head
64	4822 361 21599	Motor EG-530AD-2B

Note : Only those parts mentioned in the list are normal service parts.

EXPLODED VIEW DIAGRAM - TAPE DECK



CD 97 (DA11 MK I)

2802	4822 126 12785	47nF Y5V TUB 50V
2803	4822 126 11585	22nF +80-20% Y5V 25V
2804	4822 126 12878	1,5nF 10% 16V
2805	4822 121 51412	560nF 5% 63V
2806	4822 122 33519	470pF 10% 50V
2807	4822 122 33191	22pF 5% 50V
2808	4822 124 22263	220µF 20% 25V
2809	4822 124 40242	1µF 20% 63V
2810	4822 124 40242	1µF 20% 63V
2811	4822 122 33849	150pF 10%Y5P 50V
2812	4822 122 33849	150pF 10%Y5P 50V
2813	4822 126 12339	2,2nF 10% Y5R
2814	4822 126 13677	39pF 5% 50V
2815	4822 126 12882	100nF +80-20% 50V
2816	4822 124 41407	0,47µF 20% 63V
2817	4822 121 42687	3,3nF 10% 63V
2818	4822 124 40242	1µF 20% 63V
2819	5322 121 42386	100nF 5% 63V
2820	4822 121 43526	47nF 5% 250V
2821	4822 124 41579	10µF 20% 50V
2822	4822 122 10167	22nF 30% 25V
2823	4822 124 40769	4,7µF 20% 100V
2824	4822 124 41407	0,47µF 20% 63V
2825	4822 122 10462	15pF 5% NP0
2826	4822 124 41407	0,47µF 20% 63V
2827	4822 124 23178	47µF 20% 16V
2828	4822 124 41579	10µF 20% 50V
2829	5322 121 42489	33nF 5% 250V
2830	4822 122 10319	82pF 5% 50V
2831	4822 121 41856	22nF 5% 250V
2832	4822 124 41576	2,2µF 20% 50V
2833	4822 124 40433	47µF 20% 25V
2834	4822 126 12882	100nF +80-20% 50V
2835	4822 126 12882	100nF +80-20% 50V
2836	4822 124 80791	470µF 20% 16V
2837	4822 126 11585	22nF +80-20% Y5V 25V
2838	4822 126 12882	100nF +80-20% 50V
2839	4822 126 12882	100nF +80-20% 50V
2841	4822 126 13677	39pF 5% 50V
2842	4822 124 40849	330µF 20% 16V
2843	4822 126 13098	5,6nF 20% 16V
2844	4822 122 10466	220pF 10% 50V
2846	4822 122 33519	470pF 10% 50V
2848	4822 122 33519	470pF 10% 50V
2849	4822 122 10466	220pF 10% 50V

2860	4822 124 23178	47µF 20% 16V

3801	4822 052 10478	4R7 5% 0,33W
3802	4822 116 52252	180K 5% 0,5W
3803	4822 111 50499	3M3 5% 0,2W
3805	4822 116 83884	47K 5% 0,5W
3806	4822 116 52256	2K2 5% 0,5W
3807	4822 116 52271	33K 5% 0,5W
3808	4822 116 52263	2K7 5% 0,5W
3809	4822 116 83884	47K 5% 0,5W
3810	4822 116 52257	22K 5% 0,5W
3811	4822 116 52257	22K 5% 0,5W
3812	4822 116 52257	22K 5% 0,5W
3815	4822 050 11002	1K 1% 0,4W
3816	4822 050 11002	1K 1% 0,4W
3817	4822 116 83883	470R 5% 0,5W
3818	4822 116 83883	470R 5% 0,5W
3819	4822 117 11825	1M5 5%
3820	4822 116 52252	180K 5% 0,5W
3821	4822 116 52243	1K5 5% 0,5W
3822	4822 116 52264	27K 5% 0,5W
3823	4822 116 52234	100K 5% 0,5W
3824	4822 116 83868	150R 5% 0,5W
3826	4822 116 83961	6K8 5%
3827	4822 116 52269	3K3 5% 0,5W
3828	4822 116 52297	68K 5% 0,5W
3829	4822 116 83884	47K 5% 0,5W
3830	4822 116 52244	15K 5% 0,5W
3831	4822 116 52251	18K 5% 0,5W
3832	4822 116 83881	390R 5% 0,5W
3833	4822 116 52264	27K 5% 0,5W
3835	4822 116 52184	18R 5% 0,5W
3836	4822 050 11002	1K 1% 0,4W
3837	4822 111 30893	4M7 5% 0,2W
3838	4822 116 52234	100K 5% 0,5W
3839	4822 116 52235	1M 5% 0,5W
3840	4822 050 11002	1K 1% 0,4W
3841	4822 116 52298	680K 5% 0,5W
3842	4822 116 52297	68K 5% 0,5W
3844	4822 116 52291	56K 5% 0,5W
3845	4822 116 52298	680K 5% 0,5W
3846	4822 050 11002	1K 1% 0,4W

CD 97 (DA11 MK I)

3847	4822 116 52. 98	680K 5% 0,5W
3848	4822 116 522. 1	18K 5% 0,5W
3849	4822 052 1047.	4R7 5% 0,33W
3850	4822 116 52251	18K 5% 0,5W
3851	4822 116 5224.	15K 5% 0,5W
3852	4822 116 838 .3	470R 5% 0,5W
3853	4822 116 52.51	18K 5% 0,5W
3854	4822 116 5.243	1K5 5% 0,5W
3855	4822 116 52264	27K 5% 0,5W
3856	4822 116 .2303	8K2 5% 0,5W
3857	4822 116 52269	3K3 5% 0,5W
3858	4822 116 80176	1R 5% 0,5W
3859	4822 116 83864	10K 5% 0,5W
3860	4822 116 52207	1K2 5% 0,5W
3870	4822 052 10478	4R7 5% 0,33W
3871	4822 116 52175	100R 5% 0,5W
3880	4822 050 11002	1K 1% 0,4W
3881	4822 050 11002	1K 1% 0,4W
3882	4822 050 11002	1K 1% 0,4W
3883	4822 050 11002	1K 1% 0,4W
3884	4822 116 83882	39K 5% 0,5W
3886	4822 116 52235	1M 5% 0,5W
3890	4822 050 11002	1K 1% 0,4W
3891	4822 050 11002	1K 1% 0,4W
3892	4822 050 11002	1K 1% 0,4W
3893	4822 050 11002	1K 1% 0,4W
3894	4822 050 11002	1K 1% 0,4W
3895	4822 050 11002	1K 1% 0,4W
3896	4822 116 52256	2K2 5% 0,5W
3897	4822 116 52256	2K2 5% 0,5W
3898	4822 116 52256	2K2 5% 0,5W
3899	4822 050 11002	1K00 1% 0,4W

5000	4822 526 10494	Ferrite Bead
5010	4822 526 10494	Ferrite Bead
5020	4822 526 10494	Ferrite Bead
5030	4822 526 10494	Ferrite Bead
5040	4822 526 10494	Ferrite Bead
5050	4822 526 10494	Ferrite Bead
5060	4822 157 50964	Coil 100µH
5803	4822 242 73557	Filter CST8,46MTW-TF01

6001	4822 130 30621	Diode 1N4148

7801	4822 209 13703	IC M65821FP
7802	4822 209 32421	IC TDA1311A/N2
7803	4822 209 90496	IC M62475FP
7804	4822 130 42231	Trans BC557C
7805	4822 209 32852	IC TDA7073A/N2
7806	4822 209 32852	IC TDA7073A/N2

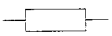
- MISCELLANEOUS -

1802	4822 265 10925	Connector 15P
8000	4822 320 12178	Flexible Foil 15P 65mm

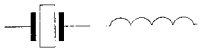
Note : Only those parts mentioned in the list are normal service parts.

ATM 3 TUNER BOARD

2101		4822 122 32764	4,7nF 20% 50V
2102		4822 126 12812	47pF 5% SL 50V
2103		4822 124 40248	10µF 20% 63V
2104		4822 124 40248	10µF 20% 63V
2105	α	4822 126 12828	24pF 5% SL 50V
2105	β	4822 126 12814	24pF 5% N220 50V
2106		4822 125 50681	Var Capacitor
2108		4822 122 32147	22pF 2% N470 100V
2109		4822 126 12809	2,2pF 5% N470 50V
2110	α	4822 126 12284	5,6pF 0,5% N1500 50V
2110	β	4822 126 12229	8,2pF N750 50V
2112		4822 124 41397	47µ 20% 25V
2113	α	4822 126 13581	0,22µF 20% 50V
2113	β	4822 124 40746	0,22µF 20% 63V
2114		4822 126 12671	330pF 10% YB 50V
2115		4822 124 40769	4,7µF 20% 100V
2116	α	4822 124 80141	10nF 10% 50V
2116	β	4822 121 43144	22nF 10% 50V
2117		4822 124 40242	1µF 20% 63V
2118		4822 124 40242	1µF 20% 63V
2119	α	4822 124 80141	10nF 10% 50V
2119	β	4822 121 43144	22nF 10% 50V
2120		4822 124 40242	1µF 20% 63V
2121		4822 124 40239	0,47µF 20% 63V
2122		4822 124 40239	0,47µF 20% 63V
2126	α	4822 125 50045	1p8-22p 250V
2134	β	482212610777	100PF 50V
2150	α	4822 125 50045	1p8-22p 250V



3101		4822 100 20167	50K 30%LIN 0,1W
3102		4822 116 52297	68K 5% 0,5W
3103		4822 050 21002	1K 1% 0,6W
3104		4822 116 52256	2K2 5% 0,5W
3105		4822 116 83864	10K 5% 0,5W
3108		4822 116 52191	33R 5% 0,5W
3109		4822 116 52234	100K 5% 0,5W
3110		4822 116 52234	100K 5% 0,5W
3113		4822 116 52252	180K 5% 0,5W



5101		4822 157 70513	Coil FM Ant
5102	α	4822 158 60627	Coil MW/LW Ant
5102	β	4822 157 70731	Coil MW Ant
5104		4822 156 30947	Coil FM Osc
5105		4822 157 71145	Coil MW Osc
5106		4822 157 70499	IFT MW
5107		4822 242 81154	Filter KMFC5058-Z
5108		4822 156 11146	IFT MW
5109		4822 157 71144	Coil 280µH

6101		4822 130 30621	Diode 1N4148
6102		4822 130 30621	Diode 1N4148

7101		4822 209 32746	IC TEA5711T/N2

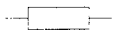
- MISCELLANEOUS -

1100		4822 277 30933	Switch
1201		4822 526 10176	Ferrite Bar

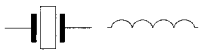
Note : Only those parts mentioned in the list are normal service parts.

α is only for FM/MW/LW
β is only for FM/MW

ELECTRICAL PARTSLIST



VL401	4822 101 11967	Rotary Volume 50K



L701	4822 157 70806	Coil 560µH
X201	4822 242 73769	Filter CST4,19MGW

D201	4822 130 30621	Diode 1N4148
D202	4822 130 31554	Diode BZX79-B4V3
D203	4822 130 30621	Diode 1N4148
D204	4822 130 30621	Diode 1N4148
D205	4822 130 34174	Diode BZX79-B4V7
D501	4822 130 30621	Diode 1N4148
D502	4822 130 30621	Diode 1N4148
D601	4822 130 30621	Diode 1N4148
D602	4822 130 30621	Diode 1N4148
D603	4822 130 30621	Diode 1N4148
D604	4822 130 30621	Diode 1N4148
D605	4822 130 11665	Diode HZS3C3
D606	4822 130 10493	Diode 8.2V
D610	5322 130 34574	Diode 1N4004G
D801	5322 130 34574	Diode 1N4004G
D802	5322 130 34574	Diode 1N4004G
D803	5322 130 34574	Diode 1N4004G
D804	5322 130 34574	Diode 1N4004G

IC501	4822 209 33988	IC BA3313L
IC601	4822 209 17541	IC UTC2025
Q201	4822 130 44503	Trans BC547C
Q501	4822 130 63773	Trans KTC3198-GR
Q601	4822 130 63773	Trans KTC3198-GR
Q602	4822 130 63773	Trans KTC3198-GR
Q603	4822 130 41327	Trans BC327-40
Q604	4822 130 44196	Trans BC548C
Q605	4822 130 41327	Trans BC327-40
Q606	5322 130 60068	Trans BC558C
Q607	4822 130 63422	Trans 8050B
Q701	4822 130 60258	Trans 2SC2001K
U201	4822 209 16127	IC TMP47C422F

- MISCELLANEOUS -

LD201	4822 135 00213	Display LD-1712
SW1	4822 277 11885	Slide Switch
SW2	4822 276 13972	Push Switch
SW201	4822 276 13443	Tact Switch
SW202	4822 276 13443	Tact Switch
SW203	4822 276 13443	Tact Switch
SW204	4822 276 13443	Tact Switch
SW205	4822 276 13443	Tact Switch
SW701	4822 277 21783	Slide Switch
	4822 276 13784	Push Switch
	4822 265 10674	Stereo Earphone Jack
	4822 240 10392	Speaker 4" 8 Ohm
	4822 146 11183	Transf 230V (For -/00/05)
	4822 146 11189	Transf 120V (For -/17)
	4822 267 31891	Socket Mains (For -/00/05)
	4822 265 11294	Socket Mains (For -/17)

Note : Only those parts mentioned in the list are normal service parts.